PALAEONTOLOGICAL SOCIETY OF JAPAN
Geological Institute, Faculty of Science,
Imperial University of Tokyo, Japan.

日本古生物学會
報告・紀事

Transactions and Proceedings
# of the
Palaeontological Society of Japan

昭和13年　　第13號
1938　　No. 13

〔地質學雜誌　第45卷　第540-543號　拔刷〕
〔Reprinted from Jour. Geol. Soc. Japan, Vol. 45, No. 540-543.〕

日本古生物學會
Palaeontological Society of Japan

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日本古生物學會報告
(Transactions of the Palaeontological Society of Japan)

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71. *Bryozoaires pléistocènes aux environs de Tako-mati, Préfecture de Tiba*[*]

Par

Katuhiko SAKAKURA

(Read February 12th; received May 27th, 1938)

Les matériaux étudiés m'ont été donnés par MM. SUZUKI et TAKAI qui ont publié un mémoire sur les couches fossilifères dans les environs de Tako-mati1).

D'après eux, ces couches sont de grès, Pléistocène inférieur, qui contient rarement des lentilles de gravier, et stratigraphiquement, elles se rapprochent mieux des couches de Dizôdô, de Yamabé ou de Sémata (toutes les trois sont du Pléistocène inférieur) que celles du Manzakien et du Kiorosien (Pléistocène supérieur)2). Et leur faune consiste principalement en éléments japoniques.

Les études des faunes bryozoaires, fossiles et récentes du Japon sont très mal connues, donc notre étude sur ces Bryozoaires de Tako-mati n'a aucun rapport sur la détermination de l'âge géologique de cette faune.

Nous avons traité seulement des Bryozoaires encroûtants car l'existence de l'autre sorte de Bryozoaires de cette région n'est pas encore connue.

Nous tenons à témoigner ici notre reconnaissance à MM. Kôiti SUZUKI et Fuyuji TAKAI de l'Institut géologique, Université Impériale à Tokio, qui ont bien voulu me présenter leurs échantillons.

1. *Aetea* sp.

Lorsque la partie distale est perdue, il est très difficile ou souvent même impossible pour distinguer *Aetea anguina* et *A. truncata*. Nos échantillons sont plus voisines de l'*Aetea truncata* que de l'*A. anguina* dans sa largeur de zooecies.

Nos. enregistrés—2005, 2006.

2. *Electra angulata* LEVINSEN (Figs. 1 et 2)

Electra angulata LEVINSEN, 1909. Morphol. and System. Studies on the Cheilostomatous Bryozoa, p. 149 pl. 22, fig. 4a.

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[*] dédié à M. le Docteur S. TOKUNAGA.

1. Couches fossilifères aux environs de Tako-mati, Préfecture de Tiba. Jour. Geol. Soc. Japan, Vol. 42, No. 496, 1935. (en japonais).

2) M. T. MITUTI du Service géologique Impérial m'a communiqué que les couches de Tako-mati ont du Pléistocène supérieur et appartiennent peut-être au Manzakien. Cette différence de leur avis attend beaucoup des études ultérieures.

Electra angulata HARMER, 1926. Polyzoa, Siboga Expedition (II), p. 207, pl. 13, fig., 11.

C'est l'espèce qui occupe plus de la moitié de nos échantillons; elle encroûte des coquilles de *Polinices, Ostrea, Pecten, Glycymeris* etc.

Nos. enregistrés—2001, 2002, 2006, etc.

3. *Callopora subalbida* CANU et BASSLER

Callopora subalbida CANU and BASSLER, 1929. Bryozoa, Philippine Region, U. S. Nat. Mus. Bull. 100, p. 101, pl. 7, fig. 5.

Répartition géographique—Pacifique: Tongatuba, Romblon.

No. enregistré—2006.

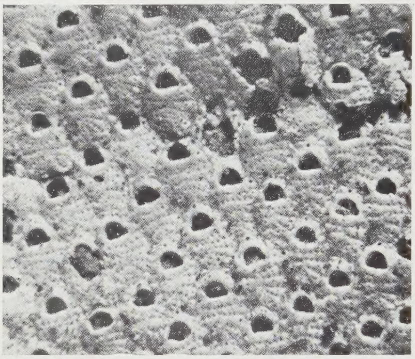

Fig. 3.

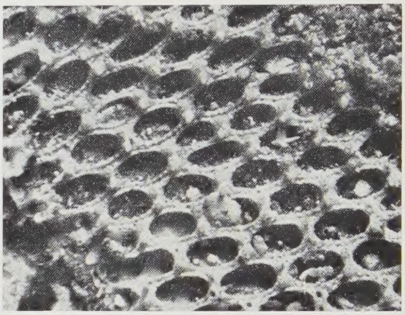

Fig. 1.

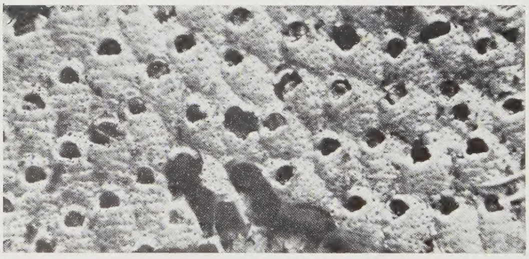

Fig. 4.

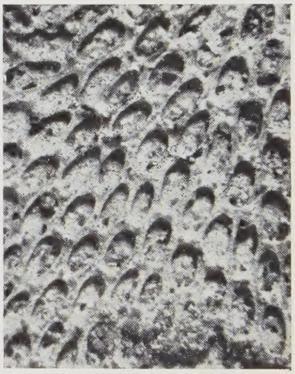

Fig. 2.

Figs. 1 et 2. *Electra angulata* LEVINSEN ×15
Figs. 3 et 4. *Reginella daruma* sp. nov. ×15

4. *Hiantopora* sp. indet.

No. enregistré—2036.

5. *Reginella furcata* (HINCKS)

Cribrilina furcata HINCKS, 1882. Ann. Mag. Nat. Hist., (5) vol. 10, p. 470, pl. 20, fig. 5.

Lyrula multipora SAKAKURA, 1935 (2). Bryozoa, Toyama Bay, Annot. Zool. Jap. vol. 15, No. 1, p. 109, pl. 8, fig. 7.

Lyrula multipora que j'ai établi comme l'espèce nouvelle pour des spécimens de la Baie Toyama était le synonyme de *Cribrilina furcata* de HINCKS dont la distribution est limitée au mer de nord.

Elle est trouvée généralement dans les couches pléistocènes de la Préf. de Tiba.

Nos. enregistrés—2005, 2010, 2011.

6. *Reginella daruma* sp. nov. (Figs. 3 et 4)

Diagnose.—Zoarium encroûtant. Zooecies distinctes, elliptiques ou subhexagonales, séparées par un sillon, arrangées alternativiment en ligne. Frontale peu convexe, formée par 7 à 10 costules bien plus larges que les sillons intercostulaires et qui possèdent chacune deux pores, dont l'un, situé près du talon est large et toujours distinct. Au fond des sillons entre chaque paire de costules se trouvent 3 à 5 pores de lumen. Orifice grand avec un hauteur de plus du quatrième du longueur de la zooecie, voûté en avant, à lèvre inférieure à peu prés droite, à lèvre supérieure quelquefois munie de deux larges perforations à chaque extrémitè latéral. Chambres de pore multiporeuses, deux distalement. Les pores de lumen à chaque coin inférieur de l'orifice sont remplacés rarement par les petites avicellaires directées distalement.

Dimensions (mm) $\left\{\begin{array}{l} Lz=0.50 \\ lz=0.42 \end{array}\right.$ $\left\{\begin{array}{l} ho=0.13\text{–}0.14 \\ lo=0.15\text{-}0.165 \end{array}\right.$ 1)

Affinité.—Cette espèce diffère de *Reginella furcata* (HINCKS) par son moindre nombre des costules et ses mesures de l'orifice plus grandes.

Je n'ai pu observer des plates polygonales au fond des sillons qui caractérisent le genre *Reginella*. Mais d'autres caractères me faitent placer notre espèce à côté de *Reginella furcata* (HINKS).

Pour la déscription, des échantillons de Nisiyatu (Pléistocène inférieur) sont aussi employés.

Nos. enregistrés.—2007, 2011.

7. *Cribrilina annulata* FABRICIUS

Cribrilina annulata HINCKS, 1880. British Marine Polyzoa, p. 193, pl. 25, figs. 11, 12.

C'est la première fois que cette espèce a été trouvée au Pacifique de l'Ouest. Nos échantillons possèdent des caractéristiques typiques de cette espèce. Une partie est ovicellée.

Répartition géographique—Mer de Nord, Arctique, Atlantique, Pacifique de Nord-Est.

Nos. enregistrés—2002, 2003, 2006.

8. *Hippothoa flagellum* MANZONI

Hippothoa flagellum CANU & BASSLER, 1929. Bryozoa of the Philippine. Bull. U. S. Nat. Mus. 100. p. 247, pl. 22, fig. 7.

Nos. enregistrés—2002, 2006.

9. *Hippothoa* cfr. *hyalina* (LINNAEUS)

Hippothoa hyalina BORG, 1933. Die marinen Bryozoen des arktischen Gebietes (Fauna Arctica) p. 530.

No. enregistré—2037.

10. *Escharoides adeonelloides* (ORTMANN)

Smittina adeonelloides SAKAKURA, 1935. p. 28, pl. 5, fig. 2.

Escharoides sauroglossa LEVINSEN, 1909. p.

La lèvre inférieure est souvent droite et ne possède pas de sinus. Un ou plus le cercles de pores entournent la frontale comme dans le cas de l'*Escharoides raestans.*

Répartition géographique—Japon du Sud-Ouest, Australie.

---

1) Lz = longueur de zooecie ho = hauteur d'orifice
lz = largeur de zooecie lo = largeur d'orifice

Nos. enregistrés.—2002, 2005, 2007.

11. *Schizoporella costulata distincta* SAKAKURA

Schizoporella costulata distincta SAKAKURA, 1935 (1) Pliocene and Pleistocene Bryozoa from the Bôsô Peninsula. (1) Jour. Fac. Sci. Univ. Tokyo, p. 19, pl. 4, figs. 4, 5; 1935 (2), p. 111.

Répartition géographique—Baie Toyama.

Répartition géologique—Pléistocène.

Nos. enregistrés—2002, 2006, 2008.

12. *Schizoporella ternata* ORTMANN

No. enregistré—2007.

13. *Schizomavella obtusata* (ORTMANN)

Lepralia obtusata ORTMANN, 1890. p. 41, pl. 3, fig. 13; OKADA. 1923, p. 227.

Diagnose.—Zoarium encroûtant. Zooecies distinctes, séparées par un sillon profond, très allongées, rectangulaires, arrangées en ligne. Frontal étant un trémocyste peu convexe, perforée minutieusement. Orifice orbiculaire, avec un large sinus et deux petites cardelles visibles. Ovicelle très saillant entourant à peu près l'orifice. Avicellaires médiennes, obtuses, situées derrière l'orifice, à pivot avec le bec dirrigé en derrière, variables dans leurs mesures et forme. La grande avicellaire est souvent spathulée. Il y a rarement une petite avicellaire à côté de l'orifice.

$$\textit{Dimensions}\begin{cases} Lz = 0.67 & ho = lo = 0.10\text{–}0.12 \\ lz = 0.25\text{–}0.33 & \end{cases}$$

Affinité.—Cette espèce diffère du *Schizoporella ternata* ORTMANN par ses mesures plus grandes (surtout celles de l'orifice), par sa frontale moins granuleuse et peu convexe.

Lepralia acuta ORTMANN est très voisine de cette espèce; d'après ORTMANN, ces deux espèces diffèrent l'une de l'autre seulement par la forme de l'avicellaire; mais cette distinction apparaît douteuse parce qu'il se trouve, l'avicellaire à bec acute avec celle à bec obtuse, quoi qu'il soit rare, dans un des spécimens de la Baie Toyama.

Répartition géographique.—Baie Sagami, Détroits de Corée (102–122 m), Baie Toyama.

No. enregistré—2002.

14. *Hippoporella gorgonensis* HASTINGS

Hippoporella gorgonensis HASTINGS, 1930. p. 723, pl. 12, figs. 62–67; pl. 17, figs. 119 and 121.

Deux jeunes colonies consistant d'une couche des zooecies sont obtenues. Les zooecies ressemblent surtout à 62 et 64 des figures de HASTINGS; ils possèdent tous les caractéristiques principales de cette espèce.

Répartition géographique—Canal de Panama.

No. enregistré.—2006.

15. *Arthropoma cecilii* (SAVIGNY-AUDOUIN)

No. enregistré.—2006.

16. *Microporella malusii* (SAVIGNY-AUDOUIN)

Nos. enregistrés.—2004, 2005.

17. *Microporella ciliata* (LINNAEUS)

Nos. enregistrés—2002, 2006, 2010.

18. *Microporella ciliata* var.

Diagnose.—Zoarium encroûtant; zooecies distinctes, séparées par un sillon profond, oblongues un peu elliptiques mais souvent très irréguliaires. Frontale bien convexe, perforée minutieusement avec plusieurs pores marginaux (areolae?) éparpillés. Orifice petit, sémicirculaire, à mince péristome un peu élevé. Ascopore petit, cissant, proche de l'orifice. Il se trouve rarement un avicellaire oval, situé au même niveau de l'ascopore. Ovicelle hyperstomiale, orbiculaire, perforée comme la frontale.

L'ancestrule est une petite zooecie avec un grand orifice bordé par 12-13 épines.

Affinité.—Cette sous-espèce est caractérisée par la position de l'avicellaire et l'existence des pores marginaux et sa frontale convexe. *Microporella ciliata* est une espèce très variable, donc il me semble que ces caractéristiques ne sont point suffisants pour établir seulement sur eux une espèce nouvelle.

No. enregistré—2006.

19. *Smittina trispinosa nitida* (Hincks)

No. enregistré.—2006.

20. *Smittina trispinosa munita* (Hincks)

Nos. enregistrés.—2002, 2006.

21. *Smittina trispinosa* var.

Par l'apparence de l'orifice et l'existence de l'avicellaire à côté latéral de celui-ci, notre spécimen ressemble à *var.* 1 de Hincks (1884, p. 361, pl. 13). Mais il possède, semble-t-il, des aréolae même au dessus de l'orifice, et ses avicellaires sont elliptiques et non pas remplacées par les avicellairees allongées.

No. enregistré.—2006.

22. *Smittina reticulata okadai* var. nov.

Smittina reticulata Okada, 1929. Loc. cit. p. 30, textfig. 14.

Une colonie qui accorde complètement avec la figure notée au dessus. Le bec de l'avicellaire est sémicirculaire au lieu d'être acute comme celui de *Smittina reticulata.*

No. enregistré.—2005.

23. *Smittina* sp. indet.

No. enregistré.—2006.

24. *Eurystomella bilabiata* (Hincks)

Eurystomella bilabiata Sakakura, 1935 (1): p. 25, textfig. 7.

Le distinct mucro derrière l'opésium est observable.

Répartition géographique.—Côte pacifique de l'Amérique du Nord, Japon.

No. enregistré.—2002.

25. *Lagenipora spinulosa* Hincks

Lagenipcra spinulosa Sakakura, 1935 (1). p. 29 (Avec bibliographie.)

Un seul spécimen tout à fait similaire dans les processus orals aux spécimens de Dizôdô. Cette espèce est vivante de Panama, à l'est, jusqu'à l'Océan des Indes.

No. enregistré.—2005.

26. *Tubulipora* sp. indet.

Nos. enregistrés.—2005, 2010.

27. *Entalophora*? sp. indet.

Nos. enregistrés.—2006, 2010.

(Les spécimens employés sont maintenant déposés au Musée de l'Institut géologique de l'Université Impériale à Tokio.)

千葉縣多古町附近の最新世蘚苔蟲 (摘要)

坂倉勝彦

鈴木好一，高井冬二兩氏の御好意により提供された千葉縣香取郡多古町四近の化石層產の蘚苔蟲の報告である。兩氏に依れば最新世下部のものならんと云ふ。

檢出されたものは 19 屬 28 種，內 22 種或は亞種名を決定し得た。1 種は學界に未だ報告を見なかつたものと考へられる。大部分は千葉縣の他の最新統に含まれるもので，所謂“南方系”及び“北方系”要素が混在してゐる樣に思はれるが，現生蘇苔蟲の分布は未だ不明の點が少なくないので暫く 1 資料として提供するにとゞめたい。

尙新亞種その他 2, 3 の種に就き記載を行つた。

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72. *A New Callianassa from the Palaeogene Isikari Series of Hokkaidô*

By

Takumi NAGAO and Ken-itirô ÔTATUME

(Contribution from the Department of Geology and Mineralogy, Hokkaidô Imperial University, Sapporo, No. 204: Read and received June 11th., 1938)

Three fossil species of *Callianassa* have been described from Japan, all from Hokkaidô; they are

Callianassa ezoensis NAGAO[1], the Upper Cretaceous Hakobuti Sandstone.

C. muratai NAGAO[2], the Neogene Poronai series and the lower part of the overlying Kawabata series, and

C. inornata NAGAO and HUZIOKA[3], the lower part of the Kawabata.

The species, to be described in the present short note, has been derived from the Palaeogene Isikari series. The Isikari series, underlaid by the Hakobuti and overlain by the Poronai, is subdivided into three parts, the terrestrial and coal-bearing Lower Isikari, the marine Middle Isikari or the Wakkanabe bed, and the Upper Isikari which is composed of marine and brackish or fresh-water sediments and intercalated seams of coal. The new *Callianassa* has been collected from the Wakkanabe bed exposed along the Sorati-gawa in the Isikari coal-field.

Callianssa isikariensis, n. sp.

Holotype: A right manus.

Paratypes: A segment, probably the merus belonging to the individual same as the horotype
A segment, probably the merus of another individual.

Horizon and locality: The Wrkkanabe bed of the Isikari series; Akama-Akabira district, Sorati-gun, province of Isikari.

Manus: Palm small, rectangular in outline, longer than high, relatively thick transversely; proximal margin somewhat sinuous; upper margin broadly arched, its proximal portion injured but apparently roundly angulated with the proximal margin, lower margin subparallel to the upper, broadly concave with its distal portion moderately convex; very short distal margin between the propodal finger and the articulation with the dactylus, not produced, slightly concave. Dorsal border rounded, the ventral one narrowly flattened with both margins between it and the lateral surfaces angulated. Outer surface somewhat crushed but indications are that it is moderately convex vertically and slightly so longitudinally, with a distinct ridge below, which is finely serrated. Inner surface slightly convex in a vertical direction, almost flat in the longitudinal one save in the propodal third, also finely serrated along the lower margin.

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[1] T. NAGAO: Two Tertiary and One Cretaceous Crustacea from Hokkaidô, Japan. Jour. Fac. Sci., Hokkaidô Imp. Univ., Series IV, Vol. II, No. 1, 1932, p. 20 pl. IV, figs. 1, 2, 4, 8, 15.

[2] T. NAGAO: Ibid, p. 17, pl. IV, figs. 9-13.

[3] T. NAGAO and K. HUZIOKA: A New Species of *Callianassa* from the Neogene Tertiary of Hokkaidô. Ibid., Series IV, Vol. IV, Nos. 1-2, 1938, p. 64, pl. IV, figs. 1-5.

Ornamentation: Both surfaces entirely covered with numerous, crowded irregularly disposed minute granules.

Propodal finger: A little shorter than the palm, triangular in cross-section, slightly curved upwards and pointed at the distal end. Inner surface convex vertically, sloping downward and inward, with a strong ridge between it and the concave upper surface; lower border narrow with a longitudinal smooth ridge; outer surface convex vertically; prehensile edge provided with a strong triangular tooth in its proximal portion.

Dactylus finger: relatively strong, slightly shorter than the propodal, strongly bent downward distally, somewhat pentagonal in cross-section, the pointed side directed downward; inner surface flat vertically but slightly convex sn its lower two-thirds, with a strong longitudinal ridge above, on the lower margin of this ridge three distant pustules are present; upper iurface horizontally flatted transversely in a short distance from the proximal end, moderately convex longitudinally, separated by the prominent ridge above cited from the inner surface, and provided with a few distant pustules; another ridge is present separating the upper surface from the outer surface. Outer surface rather narrow, slightly convex vertically and sloped inward, with three pustules above along the upper ridge. Prehensile margin concave lengthwise, with a few crowded and strong granules in its proximal portion.

Merus?: narrow, elongate-ovate in outline.

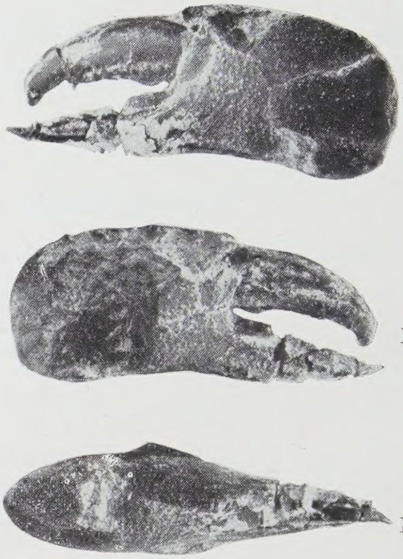
Fig. 1.
Fig. 2.
Fig. 3.

Callianassa isikarienis, n. sp.

Fig. 1. Inner view.
Fig. 2. Outer view
Fig. 3. Veutral view.

The right manus of this species is distinguished from those of *C. muratai* Nagao and *C. ezoensis* Nagao in being thicker, longer, and narrower, and in having a different ornamentation. *C. inornata* Nagao and Huzioka is easily distinguishable from the present form by it much shorter and higher palm.

C. oregonensis Dana[1] from the Oligocene of Washington has shorter fingers and a manus with its dorsal margin straighter than in the present form.

北海道古第三系石狩統産の *Callianassa* 1 新種（摘要）

長尾　巧, 大立目謙一郎

従來北海道より産せし化石 *Callianassa* は白堊紀層より1種, 第三紀幌内層及川端統下部より1種及川端統下部より他の1種にて都合3種である。この外古第三系石狩統の若鍋層より只1個の右第一脚前節あり, 上記3種とも區別せられ更に北米西岸産本屬化石とも異る。これを *C. isikariensis* Nagao and Ôtatume と名づく。

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[1] M. J. Rathbun: The Fossil Stalk-eyed Crustacea of the Pacific Slope of North America. Smithsonian Institution, U. S. Nat. Mus., Bull. 138, 1926, p. 121, pl. XXVIII, figs. 6–9.

73. *A New Lower Carboniferous Conularia from the Kitakami Mountainland*

By

Toshio SUGIYAMA

(Contribution from the Institute of Geology and Palaeontology, Tôhoku Imperial University, Sendai. Read and received June 11th., 1938.)

During a field work in the spring, last year, in the Palaeozoic area near Sakari-mati (Kesen-gun, Iwate-ken) in the Kitakami Mountainland, the writer found an interesting fossil now forming the subject of this note in an exposure along the Sakari-gawa at Tyôanzi, Hikoroiti-mura. An examination soon revealed it to be a new form of *Conularia* MILLER, a genus established on *Conularia quadrisulcata* SOWERBY[1] from the Bristol limestone in England and now known to have a wide geological range from the Cambrian to the Triassic, attaining its maximum in Gotlandian and Devonian times.

The remains of *Conularia* are very rare in Japan, and the first record of its occurrence was that of Prof. J. HAYASAKA[2] of the Geological Institute of the Taihoku Imperial University, who found *Conularia rectangularis* HAYASAKA in a Permian black slate of Imô, YAHAGI-mura, Kesen-gun which is adjacent to the locality of the present writer's material, in association with various kinds of brachiopods, including *Leptodus richthofeni* KAYSER, of mollusca and fusulinids. The present find which is the second is from a grayish-green fine grained tuffaceous rock of trachytic material of the Tyôanzi group[3] (Lowest Carboniferous), which has abundant brachiopods such as *Productus, Spirifer*, etc., bryozoas, ammonites and tetracorals.

Conularia tyôanziensis, n. sp.

Single fragmental inner mould with a small part of test still attached near anterior border ; 70 mm long and 35 mm broad.

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1) L. SLATER : A Monograph of British *Conularia*, p. 2, 1907.

2) I. HAYASAKA : A New Species of *Conularia* from Southern Kitakami, Japan. Jour. Geol. Soc. Tokyo, Vol. XXVII, No. 327, pp. 1–4, 1920.

3) H. YABE and T. SUGIYAMA : Preliminary Report on the Fossiliferous Gotlandian and Devonian Deposits Newly Discovered in the Kitakami Mountainland. Proc. Imp. Acad. Tokyo, Vol. XIII, pp. 417–420, 1937.

Shell pyramidal, probably more than 160 mm long, 40 mm broad, facial angle about 6°–7° when restored. Faces tapering almost regularly to apex?, nearly flat in middle part and sowewhat convex toward lateral border; median seam distinctly impressed on mould, but invisible on that part of test preserved; each half traversed by numerous straight oblique ribs; ribs narrow elevated, nearly equidistant, though a little more crowded posteriorly, on an average 6 counted in 10 mm, ascending obliquely forwards from the facial border to median seam, meeting there with those of opposite side in alternation (continuous on test preserved) to form rounded angles; ribs minutely granulated on crests, granules being distinct on test, but obscure on mould; those on mould carying 1–3 very fine longitudinal striae; interspaces concave, wide, about 3 times as wide as ribs, smooth on mould, obliquely corrugated on test. Interfacial border enfolded, forming a narrow shallow groove with angular edges; ribs from adjacent faces descend into it, turn sharply forwards and thickened, forming two series of nodules in alternation.

The most characteristic features of this fossil are 1) the coarse transverse ribs bearing 2) small rounded granules on the crests, and 3) fine oblique ridges in the interspaces of ribs.

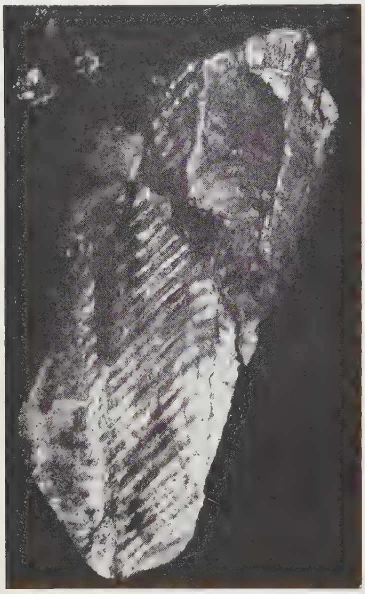

Fig. 1 Lateral view. ×1

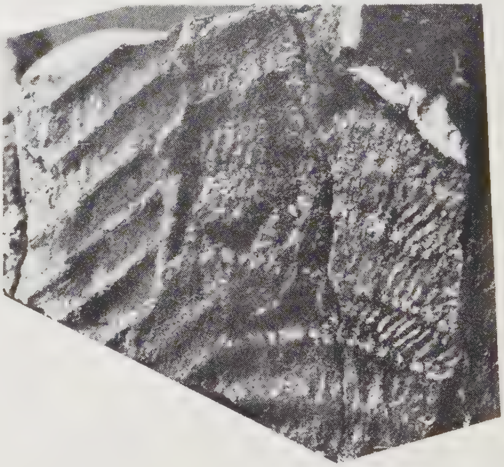

Fig. 2 A part of the same specimen. ×3

Locality and geological horizon: Tyôanzi, Hikoroiti-mura, Kesen-gun, Iwate-ken. Tyôanzi Group (Lowest Carboniferous). Reg. No. 62549.

In the literature now available to the writer there is almost no species to which the present form may safely be referred. In the first character it is much like *Conularia inornata* DANA[1] reported by L. G. de KONINCK from the Carboniferous of New South Wales, but the two area quite dissimilar in other features. In the second and third characters there is one comparable form which is *Conularia salaria* COWPER REED[2] from the *Conularia* beds of the Salt Range. This species though similar to the Japanese form in facial ornamentation, has much

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[1] L. G. de KONINCK: Descriptions of the Palaeozoic Fossils of New South Wales (Australia). Mem. Geol. Surv. New South Wales, Palaeont., No. 6, p. 248, Pl. XXII, fig 14, 1898.

[2] F. R. COWPER REED: Some Fossils from the *Eurydesma* and *Conularia* Beds (Punjabian) of Salt Range. Palaeont. Ind., N. S. Vol. XXIII, No. 1, pp. 30-32, Pl. V, figs. 18-21, 1936.

narrower ribs and interspaces. Further the latter greatly resembles *Conularia punjabica* Cowper Reed from the same horizon in the character of interfacial grooves.

Conularia rectangularis Hayasaka is quite different in every respect from the Tyôzanzi form. If one follows G. Holm in grouping species of the genus, the former probably belongs to her first group, Laeves and the latter to third, Cancellatae.

Finally the writer wishes here to express his warmest thanks to Prof. H. Yabe for the kind advice and assistance given in the preparation of this short paper.

北上山地產下部石灰紀の *Conularia* の 1 新種に就いて （摘要）

杉山敏郎

昨年の春岩手縣氣仙郡盛町西北山地に發達するゴトランド層を調査した折，日頃市村長安寺盛川沿岸に露出する灰綠色粗面岩質凝灰岩から *Conularia* の 1 種を採集した。この種に同定出來る種はないから新種名を與へた。日本では曾つて早坂一郎教授によつて氣仙郡矢作村飯森から 1 種が記載されてゐる。

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74. 江戸時代に於ける龍骨論爭の史的研究

後閑文之助

（昭和 12 年 8 月 18 日受理，10 月 8 日講演）

龍骨が上世に支那から醫藥として傳はり重要なものであつたことは聖武天皇御崩御供養の爲め天平勝寳 8 年 (756) に東大寺大佛前へ孝謙天皇が陛下御生前の御用品を獻ぜられた東大寺本願聖朝施藥御願文の中に龍骨があり，又奈良時代の龍骨化石の實物が現在正倉院に傳はつて居ることは正倉院御棚別目錄によつて知られる。然し上世から近世初期まで龍骨に就ては支那本草の教ふる所を其の儘受け容れたに過ぎなかつたが，江戸初期に日本の本草學が勃興し段々に盛んになつて寶曆の頃になると龍骨の本質に就ての檢討が始まり江戸中期には龍骨論は日本化石學上の一問題となつた。

寶曆の頃になると日本の本草家は支那の本草綱目を始め他の本草書に盛んに檢討を加へて日本の本草學の高潮期であつたので龍と龍骨とに關する問題が雜然と起つた。その問題を要約すると (1) 支那書には龍は靈物として其の習性や形性に就て詳細な記述をなして居るが文獻の異なるに依つて記載の內容が異なる。他の生物に就ては書物によつて記載が異らないが，一體かく習性の異なる龍なる動物が現在するか否か，(2) 日本には龍は現存しないが假りに龍が現棲するとすれば龍骨は果して龍の骨か，(3) 日本に象は現棲しないが象の骨格は舶來されて現在よく見て居ると云ふ事實，(4) 讃岐その他日本各地でよく產出する所謂龍骨は舶來された象の化骨によく似て居るが之は果して龍の骨か象の骨か等である。龍に對する思想の強く這入つて居た江戸中期に於て日本產龍骨化石の解決は難問であつた。

寶暦 10 年 (1760) に信陽の源通魏が龍骨辨一冊を上梓して龍の靈物としての諸性質を論じ更に龍骨に就ては彼が見た龍骨標本は鯨か人か鯤鯢の脊か防風氏の骶ならんと論じた。卽ち要所は「龍骨亦如此深山大澤巖峭泐（ロク）石之間地靈所發蒸氣爲形名之曰龍骨。龍者陰氣欲化陽之名骨者其形相似也。晉蜀山谷及吾邦函根澤中最爲多。然非堅硬白色者不入藥材。其定魂魄養精神收脱泄者陰陽精靈所凝也。故其功最大也。雖有死-龍-骨脱-龍-骨亢是山類水族之枯骨豈與天地造化自然之龍骨其功同乎。凡有形之物其分有限而於其功亦劣神靈精微之化不待言而可知矣。 陶-弘-景周-士-和輩自唱脱化之説然後和者以爲龍能吐呑骨骸何有所見而爲此妄説乎。 胷臆之怪談不可信用矣。 古人以竈下之黃土名伏-龍-肝。陰土得陽火之化。故曰龍。然陰陽神靈之氣未激動發達故曰伏。陰中之陽肝也。故曰伏龍肝。用一塊土不容疑而至龍骨何辯訟紛紛乎。 若夫不然蓋龍-腦斫龍-頭龍-膽剖龍腹求猶龍骨於周尋臥-龍-骨於蜀乎。强欲求有形龍骨猶牛-膝斫牛脚鶴-虱拔鶴毛可笑甚也。近來有鬻龍骨者。余親見之。圍尺餘長二尺許無節頑硬鹹澁黑灰色　叩之仍磣-磣如石之屑。齒角亦如此。 似大魚腐骨在沼泥中歷數年者。然未聞禽獸中如此大者。鯨乎人-乎非鯤鯢之脊則防風氏之骶乎。若爲無脱化斃死之理何人得驅馳風雲之中降伏活龍來而施屠-龍-刀批大郤導大窾使大骨爲磔然。呵呵可噴飯焉。」

この源通魏が如何なる人かに就ては私は昭和七年來調査した結果通魏は平賀源内であると云ふ決論に到達した。それは源内は幾多の變名を以つて奇才に富んで多くの著書をなし，彼が龍骨辨を作つたことは木内石亭の龍骨辨（通魏の龍骨辨とは別な著述）の序文に「本草綱目所說龍骨形狀產所諸說アツテ考ニ究極ナシ，皇朝物產家先達ノ說モ亦然リ，先年東都平賀氏龍骨辨ヲ著ス。或人是ヲ斥テ非龍骨辨ヲ作ル。云々」とあり，通魏著の龍骨辨の奥附には「金龍先生著龍骨辨二冊現行」と記してあり，源内なればこそ信陽の源通魏としたり金龍先生と書いたりするのは平氣であり且つ源内は讃州に生れて讃州產の龍骨には多大の關心を持つて翌年にポールと龍骨問答をなしたことや此の漢文が風來山人流の奇想天外の筆致と論斷をなして居ることを考へつゝ寶暦の本草家•物產家•名物家•弄石家を私は一巡顧省檢覈して通魏は源内であると思ふに到つた。私は通魏卽源内說を平賀源内全集編輯主幹で源内研究者の入田整三先生に話したら讃意を以て迎へて吳れた。

之れに對して翌寶暦 11 年 (1761) に甲斐の源昌樹は駁龍骨辨一冊を上梓して通魏說に反對した。昌樹は龍を認め龍骨を認めて「中原山澤之間蓋有物焉。而其朽骨磊落時爲漁人樵夫所獲小者咫尺大者尋常人無知其名古者目之曰龍骨。 龍骨山龍骨河蓋由是得名云。」と述べ， 讃州產に就ては「讃人所實云。是小豆島漁人取網而得。其爲物固非尋常水族所有。而其骨角齒牙粲然有別焉。視者未嘗不以爲奇也。」と述べ，龍と龍骨の本質に就ては支那說を主張した。

同年 (1761) に紅毛（オランダ）の甲比丹が江戸へ參府した際に侍醫のポールに就て平賀源内は讃岐小豆島產の龍骨を持携して紅毛の所謂スランガスタインであるか否かを質問した所ポールは然る旨を答へ且つ日本に龍骨の產するのを聞いて大いに驚いた。玆に於て源内は龍骨は象の化石なりと知つて一時象化石說を採つたが後に明和中に佃島で化骨を得て惜い哉その說を棄却した。それは木内石亭の龍骨辨の中に「明和年中東武佃島ノ漁夫沖ニテ網ニ得タリ。大サ火燒（コタツ）ヤクラ斗全備ノ首ナリ。角ハ兩方共折失テ根六七寸ツツ殘レリ。平賀氏購得タリ鳩溪常ニ龍骨ト云物ハ象骨ナリト云シガ是ヲ得テ後象骨ノ說曾テ不言。云々。」とあるによつて證される。（鳩溪は源内の號。）

この頃から紅毛人（オランダジン）によつてスランガスタインが醫療に效があると云ふので新話題を投げ日本の學者はそれが龍骨と性狀の同じ旨を述べたが，紅毛學說がスランガスタインは蛇頭に產すると傳へたらしくて，未だ龍骨を象化石と決定する者は無かつた。卽ち明和 2 年 (1765) に後藤梨春は紅毛談（オランダバナシ）の中で「すらんがすてん，蕃人のいわく，此もの蛇の頭に生る石なりといふ，其形棊石のごとく，其色白きもあり，黑きもあり，また黑白相間もあり，按るに，しぜんのかたちとも見えず，よく腫

物の膿を吸ふ，其の吸たる石を水中へ入るれば，また膿をことごとく吐出せるを取りあげ干て幾度も用る，近比和方にも，四國より出る龍骨を，このなりにこしらへ用るに，すらんがすてんに效能相かわらずと云へり，蛇頭の石といへるも龍骨よりもこしらへ成すは，蕃人の聞傳の誤にてもあるや，或人曰，潮濾石にても此ものを作るといへり。」木内石亭も安永 2 年 (1772) に雲根志前篇で同様の旨を「スランガステキン。元來蕃產にして何たる物を辨へしらず。(中略) 蠻人云大蛇の頭に產すと。(中略) 又京師の人龍骨を摺まろめてこしろふ形狀甚だ似たり。云々」と述べ，大槻磐水は天明 8 年 (1788) に蘭說辨惑で，又寛政 10 年 (1798) に蘭畹摘芳で同様の主旨を記した。かく龍骨問題が錯雜して來た時に石亭は寛政 6 年 (1794) に龍骨辨を著し序に「予龍骨ノ記ハ龍骨非龍骨ヲ爭フニアラズ。六十年來見聞スル國々ヨリ穿出セル產所形狀時日ヲ人ノ需ニ應シテ記スノミ也。考究ハ後ノ君子ニ讓ルノミ。」と記し記文に各地の龍骨說を記して居るがその中に石亭の私見が顯れて居て龍骨は象骨でない旨を言つて居る。然し各地の龍角說を丹誠して記述し龍骨出所及び諸家所藏では讃州はじめ日本各地所藏家の龍骨を記載し龍骨の故事で支那文献を渉獵して一目に龍骨各說を纏めて吳れたのは大努力であつた。彼は曰ふ「本朝ニ龍骨有事古來知ル人ナシ。近世好事ノ者取得テ弄トス。首尾全體ノ物ハ未見，頭齒角腕爪等ナリ大小アリ。頭大ナルハ口中ニ人一人ヲ隱スヘシ。齒大ナルハ木枕二ツ合シタル計ニテ上下四十八枚或ハ三十六枚，小ナルハ頭ハ獅子頭ハカリ，角長サ二尺或ハ三尺色漆ノコトク堅剛玉ノ如シ。古今物產家ノ考不一，或ハ云龍ハ靈物ナリ生死アルモノニ非スト。今弄石家ニ弄翫スル物人象骨ナリト。又或ハ龍ニ非ス象ニ非ス石ノ骨ニ似タル一種ノ石□ナリトモ云。又龍ハ骨ヲ換ヘ蛇ハ皮ヲ脫ストコノ說ヲ取時ハ眞龍ノ骨ナルベシト云人モアリテ究極シガタシ。元文已來諸國ノ山海ニ穿出ス龍骨少ナカラス。然レ共其說疑シキハ省キ且予ガ鈍筆ノ稠ルヲ厭フテ見聞スル所十ガ一ヲコヽニ記スノミ。當時藥舗ニアル新渡ノ龍骨甚ダ疑ハシ。古渡ノゴトキ物近年舶來ナキ故ニ鹿角ヲ燒キテ賣トモ云。本草綱目曰。龍骨舐テ着舌物眞不着物疑物也，予此說ハトラズ萬物石ニ化スルモノ皆悉ク舌ニ付ナリ。又一ノ考アリ。海中ヨリ上リタルハ外黑色內白キモノヨク舌ニツク。山ヨリ掘出スハ外黃色內白色光澤有物稀ニアリ不粘舌，燒テ後舌ニ付キ，藥舗鹿角ニ酢ヲ塗テ燒ト云，不燒舌ニツカザル故也。醫ハ舌ニ付物ヲ眞ト云可笑ナリ。木化石，介化石ノ類スベテ初白色後黑色年ヲ經テ玉ト變スルモノナリ。初白色ノ時悉ク舌ニツク。又一種和產舌着石ト云物アリ諸所ヨリ出，田村氏ノ紅毛ノ「スランガステイン」ハ即龍角ナルベシトテ長崎ニテ譯官吉雄楢林ノ二氏ニ質スコレ眞物ト云。又東都ニテ紅毛人外科「ハウル」ト云者ニ質ス。眞物本邦ニ出ル事ヲ聞テ大ニ驚ト云。蠻產ノ黑多堅ク和產ハ軟ナリ。サレ共全同物也。予憶ニ龍骨象骨ニアラザル事ハ角ヲ以テモ可知。(下略)」石亭はかくして龍骨は象骨で無いと言つたがそれならば龍骨が何であるかに就ては彼は解決を與えず問題が殘された。それは石亭の龍骨辨中に書かれて居る如く近世日本では龍骨の對照物が一定せず人々によつて未知不可思議の化骨は全部龍骨の範疇に入れた爲に一層この問題が難問となつた。其の一例は源內が見た佃島の化骨も恐らく象骨でなく此の爲めに象化石說を棄てるに至つたのである。

時代は過ぎて文化 8 年 (1811) に阿陽の小原春造（峒山）は龍骨一家言を上梓して龍骨は象の化石であることを論定し此の論爭は終局となつた。彼は「嘗得龍骨若干枚歷試熟玩之悉此象化骨也。有化牙大者長三四尺徑六七寸細視之其體質紋理全與象牙等焉。衆誤稱龍骨以之見之近世舶上之者多此象化骨也。」とて象化石の龍骨なることを解決し，又從來日本で產出した未知雜多な化骨を龍骨と呼んだことに對しては「象化雖謂之龍骨豈其此獨然哉。無問山類水族諸骨化而爲石者皆稱曰龍骨。如朽骨不分何骨而所主皆同。以此考之則龍骨其化骨必矣。」と明快な論斷を與へて龍骨問題を解決した。

この研究は帝國學士院學術研究補助金の一部を以てした。玆に當局に深甚の謝意を表する。

Historical Review of Discussions on the Fossil Elephants found in Japan, in the Late Yedo Period

(Résumè)

By

Bunnosuke Gokan

As to the fossil elephants, the ancient Japanese naturalists for a long time believed, following the explanation in the Chinese Pents'ao, that they were the skeletons of dragon but later in the Yedo period some scholars grew suspicious about its veracity. The questions of dragons had been variously discussed since 1760 till the so-called "skeletons of dragons" found in Japan were proved to be the ossil remains of elephants in 1811.

75. *Pyramidellid Molluscs from the Byôritu Beds of Taiwan*

By

Sitihei NOMURA

(Read and received June 11th, 1938)

The present article is based on the pyramidellid molluscs of the Pliocene Byôritu beds of Taiwan. The descriptions of the species include the specimens which were newly selected from the shell-sands derived from various localities of the said beds, in addition to those which were treated by the writer in his previous work.[1]

The collection which was made by Mr. S. ANDÔ some ten years ago, is now deposited in the Institute of Geology and Palaeontology, Tôhoku Imperial University, Sendai. The present study was carried out by the courtesy of Prof. H. YABE, to whom the writer expresses his hearty thanks.

The species distinguished are:

1. *Chrysallida* (*s. s*) *gratior*, n. sp.
2. *C.* (*Miralda*) *affectuosa* (YOKOYAMA)
3. *C.* (*Odostomella*) *awatubu*, n. sp.
4. *C.* (*O.*) *taiwanensis*, n. sp.
5. *C.* (*O.*) *y-tomitai*, n. sp.
6. *C.* (*Besla*) *curiosa*, n. sp.
7. *C.* (*Pyrgulina*) *keinosukeana*, n sp.
8. *Menestho* (*s. s*) *acteoniformis*, n. sp.
9. *M.* (*Oscilla*) *niitakayama*, n. sp.
10. *M.* (*O.*) *takasago*, n. sp.
11. *Odostomia* (*s. s*) *limpidoides*, n. sp.
12. *O.* (*s. s*) *venustaeformis* NOMURA
13. *O.* (*Marginodostomia*) *unicordata*, n. sp.
14. *Eulimella* (*Evalina*) *formosana*, n. sp.
15. *Turbonilla* (*s. s*) *contracta*, n. sp.
16. *T.* (*s. s*) *tairyoensis*, n. sp.
17. *T.* (*s. s*) *s-andoi*, n. sp.
18. *T.* (*s. s*) *hayasakai*, n. sp.
19. *T.* (*s. s*) *byorituana* NOMURA
20. *T.* (*s. s*) *bosihoensis* NOMURA
21. *T.* (*s. s*) *fulgurata*, n. sp.
22. *T.* (*Pyrgiscus*) *wangwana*, n. sp.
23. *T.* (*P.*) *nodosocostata*, n. sp.
24. *T.* (*P.*) *sintikuensis*, n. sp.
25. *T.* (*Dunkeria*) *hanzawai* NOMURA
26. *Stylopyramis* (?) species indet.
27. *Syrnola* (*s. s*) *acusiformis*, n. sp.
28. *Tropaeas longicostifera* (NOMURA)
29. *Pyramidella* (*Longchaeus*) *teres* (A. ADAMS)

Chrysallida (*s. s*) *gratior*, n. sp. Pl. 22 (9), Fig. 7

Shell small rather solid, ovate-conic, imperforate. Nuclear whorls two, apex lateral, about one-half immersed in first of later turns. Post-nuclear whorls three, flattened, decidedly shouldered at summit, contracted at suture, marked by strong, almost vertical axial ribs, of which fifteen appear upon both penultimate and last whorls. Interspaces as wide as ribs, crossed by prominent spiral cords, and nodulous at junctions; spaces inclosed by axials and spirals being rectangular. Last whorl large, longer than spire, provided with subangulated, fourth nodulose revolving cord at periphery. Base convex, marked by many, fine spiral lines. Aperture longly ovate, posterior angle acute, efuse anteriorly; outer lip sharp, wavy corresponding to outer sculpture, transversely lirate within; columella delicate, concave, oblique, with a strong fold above; no parietal callus. Height 2.0 mm., diam. 0.8 mm.

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[1] S. NOMURA, Sci. Rep. Tôhoku Imp. Univ., Ser. 2, Vol. 18, No. 2, 1935.

Chrysallida s. s. appears to be rather rare in Japan and no allied species have been described untill now.

Locality and Material: Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 14), type locality; 1 specimen, Reg. No. 57394.

Chrysallida (*Miralda*) *affectuosa* (YOKOYAMA) var. Pl. 22 (9), Fig. 11

Odostomia (*Egilina*) *affectuosa* YOKOYAMA, Jour. Fac. Sci. Imp. Univ. Tôkyô, Sec. 2, Vol. 1, Pt. 10, p. 420, pl. 47, fig. 10, 1927.

Chrysallida (*Miralda*) *affectuosa* YOKOYAMA, NOMURA, Saitô Hô-on Kai Mus., Res. Bull., No. 16, 1938.

Two specimens referable to the named species are found in the collection. They agree not only with the description and figure given by YOKOYAMA in the above cited work, but also with the specimens collected from Northern and Central Honsyû, Japan. However, the specimens from Taiwan are smaller, having fewer whorls than the type. This species belongs to the section ***Egilina*** DALL and BARTSCH, 1906.

Localities and Material: 1) 500 m. W of Tairyô, Kôryû-syô, Tikunan-gun, Sintiku-syû; 1 specimen, Reg. No. 57361: 2) Wangwa, Kôryû-syô, ditto; 1 specimen, Reg. No. 57362.

Chrysallida (*Odostomella*) *awatubu*, n. sp. Pl. 22 (9), Fig. 10

Shell minute, thin, ovate, somewhat pupoid, perforate. Nuclear whorls depressed globular, deeply immersed in first of later turns. Post-nuclear whorls three, convex, shouldered at summit, channeled at suture. Last whorl large, longer than spire; periphery and base rounded. Surface marked by distinct, rounded, retractive axial ribs, extending from summit of whorl to lower suture on spire and also prominently into base. Of these ribs about twenty-two appear on last whorl, separated by somewhat wider interspaces which are smooth. Aperture rissoid, posterior angle rather obtuse, anterior rounded and somewhat produced; outer lip sharp, transversely lirate within; columella very short, delicate, concave, provided with a rather weak fold at its upper part; parietal wall covered by a thick continuous callus. Umbilicus distinct. Height 2.0 mm., diam. 1.5 mm.

This very small species is characterized by its ovate shape, channeled suture, rissoid aperture and continuous parietal callus.

Locality and Material: Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 15), type locality; 1 specimen, Reg. No. 57364.

Chrysallida (*Odostomella*) *taiwanensis*, n. sp. Pl. 22 (9) Fig. 19

Shell small, solid, oblong-ovate or short-conic, imperforate, Nuclear whorls one and a half, globular, smooth, slightly immersed in first of later turns. Post-nuclear whorls four, flattened and shouldered at summit, forming a turreted spire; suture distinct, but not constricted or channeled. Surface with strong, rounded, almost vertical, axial ribs, eighteen appear upon last whorl, thickened at summit, free at lower suture. Interspaces as wide as ribs, smooth. Last whorl nearly equal to spire in length with rounded periphery and convex base, latter marked by continuation of axial ribs which gradually weaken from periphery to umdilical region. Aperture ovate, stout, decidedly concave, provided with a strong oblique fold; parietal wall with a thin callus. Height 2.7 mm., diam. 1.4 mm. (holotype).

Three specimens are referred to this new species. One of the paratype specimens has four post-nuclear whorls as in the type, but they are shorter and broader. It measures; height 2.2 mm., diam. 1.5 mm.

The present species resembles a certain form of *Parthenina*, but has no spiral lines on the surface as in that group.

Localities and Material: 1) Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû, (st. 14), type locality; 1 specimen, Reg. No. 57366: 2) 500 m. W of Tairyô, Kôryû-shô, ditto; 2 specimens, Reg. No. 57367.

Chrysallida (*Odostomella*) *y-tomitai*, n. sp. Pl. 22 (9), Fig. 5

Shell small, thin, imperforate. (Nuclear whorls lost). Post-nuclear whorls four, constricted slightly above middle between sutures, making whorl concave in outline, separated by distinctly contracted sutures. Surface polished, marked by prominent rounded, subvertical axial ribs, extending from summit of whorl to periphery. Of these ribs about fifteen appear upon last whorl, thickened at summit and periphery, separated by slightly wider, smooth interspaces. Periphery and base well rounded latter smooth, except for continuations of axial ribs near periphery. Aperture rissoid (outer lip largely fractured); columella short, stout, oblique, provided with a strong, oblique fold at its upper part; parietal callus thick, continuous. Height ca. 1.7 mm., diam. ca. 0.7 mm.

This species resembles *Turbonilla contracta* n. sp. which is described in this paper in form and sculpture, but has a rissoid aperture with a distinct fold at columella.

The specific name is given in honor of Mr. Yoshirô Tomita, Assistant-Professor of the Institute of Geology, Taihoku Imperial University, Taiwan.

Locality and Material: 500 m. W of Tairyô, Kôryû-shô, Tikunan-gun, Sintiku-syû; 1 specimen, Reg. No. 57360.

Chrysallida (*Besla*) *curiosa*, n. sp. Pl. 22 (9), Fig. 12

Shell, minute, thin, pupiform, perforate. Nuclear whorls depressed, small, very deeply immersed in first of later turns. Post-nuclear whorls three, convex, feebly shouldered at summit, contracted at suture, marked by strong, somewhat flexous, rounded, subvertical axial ribs, of which about twenty appear upon last whorl, not thickened at summit and at lower suture. Interspaces as wide as ribs, marked by three, spiral raised threads upon penultimate whorl and five upon last whorl above periphery; threads appear only upon anterior half of a whorl between sutures. Periphery and base well rounded; later marked by continuation of axial ribs which extend feebly into umbilical region and former by about five spiral threads. Aperture ovate, posterior angle ratner acute; outer lip thin; anterior roundly produced; columella delicate, oblique, provided with a thin, oblique fold at its upper part; apparently no parietal callus. Umbilicus narrow. Height 1.0 mm., diam. 0.5 mm.

This species closely resembles "*Odostomia* (*Besla*)" *bicinctella* Yokoyama[1] from the Pleistocene of Tôkyô, but differs in detail spiral sculpture.

Locality and Material: 500 m. W of Tairyô, Tikunan-gun, Sintiku-syû; 1 specimen, Reg. No. 57365.

Chrysallida (*Pyrgulina*) *keinosukeana*, n. sp. Pl. 22 (9), Fig. 20

Shell small, fairly solid, elongate-conic, subperforate. Nuclear whorls about two, small, pointed, helicoid up-turned, scarcely immersed in first of later turns. Post-nuclear whorls five, regularly enlarging, moderately high between sutures, almost flat, narrowly and sharply shouldered at summit to form a somewhat tabulated spire; suture distinct, more or less constricted. Surface marked by strong, almost equally spaced rounded, vertical ribs, extending from summit of whorl to lower suture on spire and rather prominently into umbilical region at base. Of these ribs about eighteen appear upon last whorl, more or less thickened above, free at lower end; interspaces nearly equal to ribs in width, marked by many, equal and equally spaced, rather distinct incised lines. Periphery of last whorl rounded; base convex, similarly sculptured like space between sutures, axials less prominent. Aperture ovate ? (outer lip fractured); posterior angle apparently rather obtuse; columella stout, slightly curved, provided with a subhorizontal fold at its upper part; parietal wall subcontinuous, covered by a thick callus. Umbilicus small, narrow. Height 3.4 mm., diam. 1.5 mm, (holotype).

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[1] M. Yokoyama, Jour. Fac. Sci. Imp. Tôkyô, Sec. 2, Vol. I, Pt. 10, p. 422, pl. 47, fig. 17, 1927.

This species resembles *Chrysallida (Pyrgulina) amanda* (GARRETT)[1] from Viti Island, but the fewer ribs and flatter whorls serve to distinguish it.

The specific name is given in honor of Mr. Keinosuke TAN, Assistant-Professor of the Institute of Geology, Taihoku Imperial Univerisity, Taiwan.

Localities and Material: 1) Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 18), type locality; 1 specimen, Reg. No. 57392: 2) Wangwa, ditto (st. 24); 1 specimen, Reg. No. 57393.

Menestho (s. s) *acteoniformis*, n. sp. Pl. 22 (9), Fig. 16

Shell small, solid, elongate-ovate, imperforate. Nuclear whorls at least two, deeply, obliquely immersed in first of later turns, and only a small rounded portion of last volution visible. Post-nuclear whorls three, well rounded, feebly shouldered at summit, impressed at suture, marked by strong, flattened cords. Of these cords five appear upon penultimate whorl, and six on last whorl above periphery, upper-most ones being medially sulcate giving the appearance of two smaller cords. Interspaces deep, narrower than cord. Surface sculptured by axial striae which are more prominent in interspaces than on cords. Last whorl large, longer than spire with broadly rounded periphery and convex base; latter marked by about eight spiral cords and numerous slender axial striae like space between sutures, cords successively weaken from periphery to umbilical region. Outer lip fractured, aperture may have been longly oval; columella stout, curved, without visible fold; parietal callus thin; umbilical region depressed. Height 2.5 mm., diam. 1.1 mm.

This small *Menestho* is characterized by its ovate outline, short spire and large body-whorl, and resembles a certain species of *Acteon*. However it is not a member of that genus.

Locality and Material: Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 14), type locality; 1 specimen, Reg. No. 57391.

Menestho (*Oscilla*) *niitakayama*, n. sp. Pl. 22 (9), Fig. 22

Shell of medium size, rather solid, imperforate, slender elongate-conic. Nuclear whorls (lost in type) two, small, helicoid, slightly immersed in first of later turns. Post-nuclear whorls seven, lateral outline straight, marked by three revolving cords between sutures; cords unequal and unequally spaced, middle one in each whorl strongest, lowest one generally smallest. Interspaces deep, subchanneled, lower one wider than upper; suture subchanneled, indistinct. Periphery of last whorl angulate, marked by fourth cord which is almost equal to upper-most one in width. Base short, plano-convex, sculptured with four revolving cords which are smaller than these on space between sutures, and many microscopic, axial threads.

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[1] W. H. DALL and P. BARTSCH, Proc. U. S. Nat. Mus., Vol. 30, No. 1452, pl. 18, fig. 3, 1906.

Aperture small, rhomboidal, posterior angle rather obtuse, anterior end somewhat fractured in all specimens; outer lip rather thick; columella very short, stout, concavely curved, provided with a strong, oblique fold at its upper part; parietal wall covered with a very thin callus. Umbilicus perfectly closed. Height 5.0 mm., diam. 2.0 mm (holotype).

This species resembles a *Cingulina*, but has a columellar-fold.

Localities and Material: 1) 500 m. W of Tairyô, Kôryû-shô, Tikunan-gun, Sintiku-syû, type locality; 3 specimens, Reg. No. 57398: 2) Wangwa, Kôryû-syô, ditto (st. 18); 1 specimen, Reg. No. 58397: 3) Wangwa, ditto (st. 24); 1 specimen, Reg. No. 57396.

Menestho (*Oscilla*) *takasago*, n. sp. Pl. 22 (9), Fig. 9

Shell small, thin, ovate-conic, imperforate. Nuclear whorls small, depressed, deeply, obliquely immersed in first of later turns. Post-nuclear whorls four, very slightly convex, narrowly shouldered at summit, separated by rather well marked, deep sutures. Surface with strong, subequal, and subequally spaced spiral cords. Of these cords four appear on spire whorls, five on last whorl above periphery; interspaces nearly equal to cords in width, axially striate. Periphery of last whorl rounded. Base short, convex, marked by five spiral cords and fine axial threads; cords less prominent those in space between sutures and tend to become almost obsolete at umbilical region. Aperture fractured, apparently small, rhomboidal, posterior angle obtuse; columella short, stout, oblique, provided with an oblique fold at its upper part; parietal callus thin. Height 2.3 mm., diam. 1.0 mm.

This species can be distinguished from the preceding one by the smaller size with four instead of three revolving cords on the spire whorls as in that species.

Locality and Material: Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 18), type locality; 1 specimen, Reg. No. 57395.

Odostomia (s. s) *limpidoides*, n. sp. Pl. 22 (9), Fig. 13, 14

Odostomia (*Odostomia*) *limpida* Dall and Bartsch, Nomura, Sci. Rep. Tôhoku Imp. Univ., Ser 2, Vol. 18, No. 2, p. 225, Not *Odostomia limpida* Dall and Bartsch, in Proc. U. S. Nat. Mus., Vol. 30, p. 364, pl. 26, fig. 7, 1906.

Shell of moderate size, fairly solid, elongate-ovate, or short-conic, smooth, polished. Nuclear whorls at least one and one-half, rather small, obliquely immersed in first of later turns, and a small rounded portion of last volution is visible. Post-nuclear whorls six, slightly convex between sutures, narrowly shouldered at summit, markedly constricted at suture, especially in aged whorls; last whorl nearly equal to spire in length with angulate periphery; base rather short, convex. Sculptured by only fine microscopic, flexuose growth-lines. Aperture somewhat angular-ovate, oblique, posterior angle acute, anterior end slightly produced, narrowly rounded; outer lip thin and smooth within (somewhat fractured in type); columella stout, of moderate length, decidedly concave above, oblique below, provided with a strong, subhorizontal fold at its upper part; parietal wall covered with a thin callus. Umbilicus wide. Height 4.3 mm., diam. 2.4 mm. (holotype).

This is a moderately large species characterized by its regular conic outline, smooth surface, markedly constricted whorls at the sutures and wide umbilicus.

In my previous paper cited above, I took the specimens of this species as being identical with *Odostomia limpida* Dall and Bartsch. However, a careful comparison of several specimens from the Byôritu beds of Taiwan with the typical form of *Odostomia limpida* collected from Honsyû, it was found that the former differs from the latter by having a somewhat thicker test, shorter base, smaller aperture, wider umbilicus and more markedly constricted whorls at the sutures.

There are several specimens of this species in the collection. The degree of peripheral angulation appears to be somewhat variable in each individual, some being rounder than the type. This varietal form is also figured for comparison (fig. 14).

Localities and Material: 1) 700 m. E of Hakusyaton, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 3), type locality; 1 specimen, Reg. No. 53980: 2) 1100 m. NE of Hakusyaton ditto (st. 9); 1 specimen, Reg. No. 62603: 3) 500 m. W of Tairyô, Koryû-syô, ditto; 28 specimens, Reg. No. 57400: 4) Wangwa, Kôryû-syô, ditto (st. 8); 3 specimens, Reg. No. 62601: 5) Wangwa, ditto (st. 14); 2 specimens, Reg. No. 53981: 6) Wangwa, ditto (st. 18); 4 specimens, Reg. No. 62605: 7) Wangwa, ditto (st. 21); 1 specimen, Reg. No. 53982: 8) Wangwa, ditto (st. 24); 2 specimens, Reg. No. 62607: 9) Wangwa, ditto (st. 37); 3 specimens, Reg. No. 62606: 10) Kôbokô, Siko-syô, Byôritu-gun, Sintiku-syû; 2 specimens, Reg. No. 62602: 11) E of Rinsuikwa, Kôbokô, ditto (st. 2); 1 specimen, Reg. No. 62694.

Odostomia (s. s) *venustaeformis* NOMURA Pl. 22 (9), Fig. 15

Odostomia (*Odostomia*) *venustaeformis* NOMURA, Sci. Rep. Tôhoku Imp. Univ. Ser. 2, Vol. 18, No. 2, p. 225, pl. 10, figs. 49a, 49b, 1935.

This is a moderately large species characterized by its short spire, and long body-whorl with an elongate aperture. It resembles a certain species of *Agatha* in outline. The anterior part of aperture of the specimen is unfortunately lost. It is here refigured since the figures in my previous work do not show the detailed characteristics.

Locality and Material: 950 m. SW of Taikwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 10), type locality; 1 specimen, Reg. No. 53983.

Odostomia (*Marginodostomia*) *unicordata*, n. sp. Pl. 22 (9), Fig. 17

Shell small, rather solid, ovate-conic, smooth. Nuclear whorls about two, small, rather high, pointed, standing obliquely on edge of first of later turns. Post-nuclear whorls four, flattened, markedly shouldered at summit forming a tabulated spire; sutures simple, not constricted, preceeded by a distinct marginal cord in each whorl; last whorl somewhat longer than spire with subangulate periphery and convex base. Surface smooth, except for extremely fine growth-lines all over as well as a marked groove which defines submarginal cord at two-thirds of whorl-height from lower suture. Aperture oblique, angular-ovate, or somewhat rhomboidal, posterior angle acute, anterior end rounded, very slightly produced; outer lip thin with a regular convex curve, smooth within; columella short, stout, decidedly curved, provided with a strong, oblique fold at its upper part; parietal wall covered with a very thin callus. Umbilicus closed. Height 2.5 mm., diam. 1.5 mm. (holotype).

Marginodostomia was established in 1936[1] (type-*Odostomia suturamarginata* NOMURA, Siogama bay, Recent) as a section of *Odostomia*. Since then, no species of the present group have been found; this is the second species and also the first record as fossil.

This species is distinguished from the type, *Odostomia suturamarginata*, by the narrower shell, less rhomboidal aperture and the more prominent subsutural cord.

Localities and Material: 1) Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 18), type locality; 1 specimen, Reg. No. 57399: 2) Wangwa, ditto (st. 24); 1 specimen, Reg. No. 62608.

Eulimella (*Evalina*) *formosana*, n. sp. Pl. 22 (9), Fig. 2

Shell small, thin, slender, subcylindric, imperforate, smooth. Nuclear whorls rather large, helicoid, apex lateral, highly eleveted from edge of first of later turns. Post-nuclear whorls seven, rather short between sutures, distinctly corded above, well rounded below. Suture well marked. Surface smooth, polished. Last whorl slightly less than one-third of shell-height; periphery rounded; base very short, convex, smooth. Aperture small, more or less rhomboidal, posterior angle acute, outer lip and basal margin fractured; columella short, oblique; parietal callus very thin. Height 3.7 mm., diam. 0.6 mm.

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[1] S. NOMURA, Saitô Hô-on Kai Mus., Res. Bull., No. 6, p. 34, 1936.

The characteristic fracture of the members of *Evalina* is due to the shell having a distinct subsutural band in each whorl. The present species resembles *Eulimella* (*Evalina*) *monolirata* (Folin), the type species of *Evalina*, figured by Thiele[*)] but the narrower shell, shorter base and less straighter columella distinguish it from Folin's species.

Locality and Material: 500 m. W of Tairyô, Kôryû-syô, Tikunan-gun, Sintiku-syû, type locality; 1 specimen, Reg. No. 62610.

Turbonilla (*s. s*) *contracta*, n. sp. Pl. 22 (9), Fig. 6.

Shell very small, thin, imperforate, shining. (Nuclear whorls lost). Post-nuclear whorls four, contracted slightly above to middle between sutures, making outline concave; concavity especially prominent on penultimate and last whorls; shouldered at summit, markedly contracted at suture. Surface with about fifteen, somewhat retractive, rounded, axial ribs, thickened and fussed at summit, terminate at periphery; interspaces as wide as ribs, smooth. Periphery and base rounded, latter smooth. Aperture rhomboidal? (outer lip fractured); columella rather stout, short, substraight; parietal wall covered by a thick callus. Height 1.7 mm., diam. 0.8 mm.

This species is characterized by its small size and concave outline of the whorls which is due to the ribs being greatly thickened at the summit.

Locality and Material: Wangwa, Kôryû-syô, Tikuana-gun, Sintiku-syû (st. 18), type locality; 1 specimen. Reg. No. 57347.

Turbonilla (*s. s*) *tairyoensis*, n. sp. Pl. 22 (9), Fig. 26

Shell small, thin, elongate-conic, imperforate. Nuclear whorls small, deeply immersed in first of later turns, and about one-third of last volution projects from them. Post-nuclear whorls six, flattened, or somewhat concave around middle, rather distinctly shouldered at summit, subconstricted at suture marked by rounded, axial ribs. Ribs nearly vertical on upper four whorls, protractively flexuose on lower two whorls, thickened at summit, forming a crenulate shoulder, about twenty appear on last whorl and abruptly terminate at periphery. Interspaces deep, smooth, wider than ribs. Periphery of last whorl angulated; base short, smooth, convex, except at umbilical region which is somewhat depressed. Aperture rather small, quadrate, posterior angle obtuse, anterior margin apparently not much produced; outer lip fractured; columella short, stout, straightish; parietal callus thin. Height 2.9 mm., diam. 1.3 mm.

This small species is characterized by its rather short-conic outline, distinct shoulder, thickened ribs at the summit and flattened whorls.

Locality and Material: 500 m. W of Tairyô, Kôryû-syô Tikunan-gun, Sintiku-syû, type locality; 1 specimen, Reg. No. 57339.

Turbonilla (*s. s*) *s-andoi*, n. sp. Pl. 22 (9), Fig. 25

Shell small, fairly solid, broadly coinc, imperforate. Nuclear whorls helicoid, large, apex lateral, highly raised from edge of first of later turns. Post-nuclear whorls five, rapidly and regulary enlarging. very short between sutures, inflated, most convex part slightly below middle, appressed at summit, contracted at suture, marked by strong, almost vertical rounded ribs, as wide as, or slightly narrower than their interspaces. Of these ribs sixteen appear upon last whorl, extending from summit of whorl to lower suture, and terminate by fusion at periphery of last whorl which is angulated. Base short, planoconvex, smooth, somewhat depressed at umbilical region. Aperture small, subrhomboidal, posterior angle blunt; outer lip fractured in type specimen; columella short, moderately strong, straight; parietal wall covered with a thin callus. Height 2.5 mm., diam. 0.9 mm. (holotype).

The shell appears to grow somewhat larger than the type; one incomplete specimen from the same locality as the type has seven post-nuclear whorls (apical ones missing) and measures about 3.0 mm in height.

This small *Turbonilla* is characterized by its broad conic outline, strong vertical ribs, appressed summit and inflated whorls.

The specific name is given in honor of Mr. Shôzaburô ANDO, formerly a geologist of the Nippon Petroleum Company who collected the type.

Localities and Material: 1) 500 m. W of Tairô, Kôryû-shô, Tikunan-gun, Sintiku-syû, type locality; 5 specimens, Reg. No. 57345: 2) Wangwa, Kôryû-syô (st. 18), ditto; 2 specimens, Reg. No. 57346.

Turbonilla (*s. s*) *hayasakai*, n. sp. Pl. 22 (9), Fig. 4

Shell rather small, thin, elongate-conic, imperforate, polished. Nuclear whorls at least two, large, helicoid, apex lateral, highly elevated from edge of first turns. Post-nuclear whorls seven, well rounded around middle, feebly shouldered at summit, appressed at suture, marked by prominent, rounded, protractively flexuose axial ribs, fifteen appear upon last whorl, and one less upon penultimate whorl, free at summit, fused together at periphery where they terminate to leave a narrow, smooth area above lower suture. Intercostal spaces about twice as wide as ribs. Periphery of last whorl angulated; base short, rather flattened, smooth. Aperture rhomboidal, posterior angle acute; outer lip largely fractured, but may have been thin, smooth within; columella delicate, more or less oblique; parietal callus thin; basal lip fractured. Height 3.2 mm., diam. 0.9 mm. (holotype).

This small species is characterized by its large nucleus, convex whorls, flexuous ribs, broad interspaces, angulate periphery and flattened base.

This species is named in honor of Prof. I. HAYASAKA, of the Institute of Geology, Taihoku Imperial Uuiversity, Taiwan.

Localities and Material: 1) Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 14), type locality; 1 specimen, Reg. No. 57341: 2) Wangwa (st. 18), ditto; 2 specimens, Reg. No. 57342: 3) 500 m. W of Tairyô, Kôryû-syô, ditto; 5 specimens, Reg. No. 57343: 4) Sankwakô, Tûsyô-syû, Byôritu-gun, Sintiku-syû; 1 specimen, Reg. No. 57344.

Turbonilla (*s. s*) *byorituana* NOMURA Pl. 22 (9), Fig. 3

Turbonilla (*Turbonilla*) *byorituana* NOMURA, Sci. Rep. Tôhoku Imp. Univ. Ser, 2, Vol. 18, No. 2, p. 224, pl. 10, figs. 36a, 36b, 1935.

The slender shape, fairly solid test, short and convex whorls, subconstricted suture and few axial ribs which are retractively slanting on the lower whorls serve in distinguishing this from other allied species.

Locality and Material: S of Bôsiho, Siko-syô, Byôritu-gun, Sintiku-syû (st. 7), type locality; 1 specimen, Reg. No. 37565.

Turbonilla (*s. s*) *bosihoensis* NOMURA Pl. 22 (9), Fig. 28

Turbonilla (*Turbonilla*) *bosihoensis* NOMURA, Sci. Rep. Tôhoku Imp. Univ., Ser. 2, Vol. 18, No. 2, p. 224, pl. 10, Figs. 37a, 37b, 1935.

The broadly conic outline, stout test, flattened whorls and prominent vertical ribs which are separated by somewhat narrower interspaces are the characteristic features of this species.

Locality aud Material: S of Bôsiho, Siko-syô, Byôritu-gun, Sintiku-syû (st. 7), type locality; 1 specimen, Reg. No. 37555.

Turbonilla (*s. s*) *fulgurata*, n. sp. Pl. 22 (9), Fig. 18

Shell very small, thin, broadly conic, imperforate. Nuclear whorls helicoid, up-turned, apex lateral, highly elevated from edge of first of later turns. Post-nuclear whorls four, polished, shining, short between sutures, tabulately shouldered at summit, slightly convex around middle, subconstricted at suture, marked by strong, rounded, almost vertical ribs, as wide as their interspaces, extending from summit of whorl to lower suture, free at both ends; of these ribs sixteen appear upon last whorl, and terminate abruptly at subangulated periphery. Base short, convex, smooth. Aperture rhomboidal, posterior angle acute, anterior margin rounded; outer lip fractured (rather thick ?), smooth within; columella short, stout, straight; parietal callus very thin. Height 2.3 mm., diam. 0.8 mm.

This species is distinguishable from *Turbonilla tairyoensis* n. sp. described in this paper, mainly by its smaller size, larger nucleus, and more prominent axial ribs which are not thickened at the summit of whorl; furthermore, the surface of the shell is polished and shining.

Locality and Material: 500 m. W of Tairyô, Kôryû-syô, Tikunan-gun, Sintiku-syû, type locality; 1 specimen. Reg. No. 57340.

Turbonilla (*Pyrgiscus*) *wangwana*, n. sp. Pl. 22 (9), Fig. 24

Shell small, fairly solid, apparently slender, imperforate, polished. (Nuclear as well as a number of post-nuclear whorls lost). Preserved whorls five, rounded, separated by well marked, somewhat contracted sutures. Surface with strong, subvertical axial ribs, of which thirteen occur upon last whorl, free at both ends on spire, fusing and terminating at periphery of last whorl. Interspaces broad, about twice as wide as ribs, crossed by many, microscopic, incised spiral lines. Periphery of last whorl decidedly angulated; base short, flattened, marked by fine spiral threads as well as feeble continuations of axial ribs. Aperture rhomboidal? (outer lip fractured); columella short, straight; parietal callus thin. Height?. diam. 1.0.

This species belongs to the section *Mormula.*

Locality and Material: Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 14), type locality; 1 specimen, Reg. No. 57351.

Turbonilla (*Pyrgiscus*) *nodosocostata*, n. sp. Pl. 22 (9), Fig. 27

Shell small, thin, elongate-conic, turreted imperforate. Nuclear whorls two, large, helicoid, apex lateral, about one-half immersed in first of later turns. Post-nuclear whorls six, nearly flattened, or more or less concave in middle, with a decidedly tabulated shoulder; suture distinct, slightly constricted. Surface marked by strong, rounded, almost verical axial ribs, eighteen appear upon last whorl, thickened and somewhat nodulous at summit, free at lower suture. Intercostal spaces as wide as ribs, provided with many, microscopic, but rather distinct raised threads. Periphery of last whorl subangulated; base convex, with many spiral threads and feeble continuations of axial ribs, which become obsolete at umbilical region. Aperture rhomboidal, posterior angle acute, anterior end rounded, slightly produced; outer lip thin, smooth within; columella moderately stout, curved, provided with a trace of columella-fold at its upper part; parietal wall free from callus. Height 3.0 mm., diam. 1.0 mm. (holotype).

The turreted spire and nodulous ribs at the summit of whorl serve in distinguishing this from the known species of the genus.

Locality and Material: 500 m. W of Tairyô, Kôryû-syô, Tikunan-gun, Sintiku-syû, type locality; 2 specimens, Reg. No. 57350.

Turbonilla (*Pyrgiscus*) *sintikuensis*, n. sp. Pl. 22 (9), Fig. 8

Shell small, thin elongate-conic, imperforate. Nuclear whorls at least two, helicoid, apex lateral, highly projecting from edge of first of later turns. post-nuclear whorls four, short between sutures, well rounded around middle, appressed at suture, marked by strong, rounded somewhat protractive axial ribs, one or two of them in each whorl being stouter than others. Of these ribs about eighteen appear upon last whorl, free at summit, fusing and terminating at periphery. Intercostal spaces somewhat irregular in width, but generally wider than ribs, marked by five or six spiral grooves, or a series of pits which do not cross ribs. Periphery of last whorl angulated; base convex, sculptured with obsolete spiral grooves and feeble continuation of axial ribs. Aperture quadrate, posterior angle rather obtuse, anterior end rounded; outer lip thin; columella short, stout, substraight; almost no parietal callus. Height 1.6 mm., diam. 0.5 mm. (holotype).

A specimen from Wangwa (st. 18) which was previously mentioned as *Turbonilla* (*Strioturbonilla*) sp.[1] may perhaps belong to this species. It is larger than the type, but has only three lower whorls.

This species belongs to the section *Mormula* as it has one or two varices in each whorl.

Localities and Material: 1) 500 m. W of Tairyô, Kôryû-syô, Tikunan-gun, Sintiku-syû, type locality; 1 specimen, Reg. No. 57349: 2) Wangwa, Kôryû-syô, ditto (st. 18); 1 specimen Reg. No. 53985: 3) Wangwa, ditto (st. 24); 1 specimen, Reg. No. 57348.

Turbonilla (*Dunkeria*) *hanzawai* NOMURA Pl. 22 (9), Fig. 21

Turbonilla (*Pyrgisculus*) *hanzawai* NOMURA, Sci. Rep. Tôhoku Imp. Univ., Ser. 2. Vol. 18, No. 2, p. 223, pl. 10, figs. 32, 33, 1935.

The shell is sculptured with strong axial ribs and strong spiral cords making the surface nodose at junctions. The subgeneric position of the species may be *Dunkeria* rather than *Pyrgisculus*.

Locality and Material: The upper course of Sairyôkyô, Satin-syô, Sinkwa-gun, Tainan-syû, type locality; 7 specimens, Reg. No. 53979.

Stylopyramis (?) species indet. Pl. 22 (9), Fig. 23

A fragment of the apical part resembling *Stylopyramis cerithioides* THIELE[2] in certain respects, but differs from THIELE's species by having four instead of three revolving cords on the spire whorls.

Locality and Material: Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû, (st. 18); 1 specimen, Reg. No. 57338.

Syrnola (*s. s*) *acusiformis*, n. sp. Pl. 22 (9), Fig. 1

Shell very small, thin, slender, typically syrnoliform, imperforate, smooth. Nuclear whorls large, helicoid, apex lateral, standing highly and obliquely on edge of first of later turns. Post-nuclear whorls eight, short between sutures, flattened above, angular at about one-third of whorl-height from lower suture which is somewhat constricted. Surface smooth polished. Periphery of last whorl subangulated; base short, convex. Aperture small, subrhomboidal, posterior angle moderately acute, anterior end rounded, not produced; outer lip fractured, but may have been thin; columella delicate, short, curved, provided apparently, with a rather thin fold at its upper part; parietal callus very thin. Height 3.4 mm., diam. 0.6 mm.

This species seems to have a thin fold on the columella, and hence it is provisionally referred to the genus *Syrnola*. The peculiar curvature of whorls in this species serve to distinguished it from other described species of *Syrnola* from Japan and elsewhere.

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[1] S. NOMURA, Sci. Rep. Tôhoku Imp. Univ., Ser. 2, Vol. 2, p. 224. 1935.

[2] J. THIELE, Handbuch der systematischen Weichtierkunde Band. 1, s. 236, fig. 244, 1931.

Locality and Material: Wangwa, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 15), type locality; 1 specimen, Reg. No. 62609.

Tropaeas longicostifera (Nomura)

"*Pyramidella*" *longicostifera* Nomura, Sci. Rep. Tôhoku Imp. Univ., Ser. 2, Vol. 18, No. 223, pl. 10, figs. 41a, 42b, 1935.

The present species was questionally referred to *Pyramidella* in my previous report cited above, but now I am convinced that it is *Tropaeas* Dall and Bartsch, 1904, by having strong axial ribs, distinct spiral pits in the interspaces and two columellar-folds.

Locality and Material: 1200 m. E of Zyôtûsyôwan, Tûsyô-syô, Byoritu-gun, Sintiku-syû type locality; 1 specimen, Reg. No. 53486.

Pyramidella (Longchaeus) teres (A. Adams)

Pyramidella (*Pyramidella*) *teres* A. Adams, Nomura, Sci. Rep. Tôhoku Imp. Univ., Ser. 2, Vol. 18, No. 2, p. 222, pl. 10, fig. 27, 1935.

Imperfect specimens.

Localities and Material: 1) 700 m. SW of Kôkwan, Kôryû-syô, Tikunan-gun, Sintiku-syû (st. 23); 1 specimen, Reg. No. 53796: 2) Wangwa, Kôryû-syô, ditto (st. 18); 1 specimen Reg. No. 57363.

Explanation of Plate 22 (9)

Page

Fig. 1. *Syrnola* (*s. s.*) *acusiformis*, n. sp. from Wangwa (st. 15); height 3.4 mm. ··830 (118)

Fig. 2. *Eulimella* (*Evalina*) *formosana*, n. sp. from 500 m. W of Tairyô; height 3.7 mm. ··························826 (114)

Fig. 3. *Turbonilla* (*s. s.*) *byorituana* Nomura from Bôsiho (st. 7); height 3.8 mm. (In my previous paper, this specimen was erroneously measured as 4.8 mm.··828 (116)

Fig. 4. *Turbonilla* (*s. s.*) *hayasakai*, n. sp. from Wangwa (st. 14); height 3.2 mm.··828 (116)

Fig. 5. *Chrysallida* (*Odostomella*) *y-tomitai*, n. sp. from 500 m. W of Tairyô; height 1.7 mm. ··························823 (111)

Fig. 6. *Turbonilla* (*s. s.*) *contracta*, n. sp. from Wangwa (st. 18); height 1.7 mm.··827 (115)

Fig. 7. *Chrysallida* (*s. s.*) *gratior*, n. sp. from Wangwa (st. 14); height 2.0 mm. ··821 (109)

Fig. 8. *Turbonilla* (*Pyrgiscus*) *sintikuensis*, n. sp. from 500 m. W of Tairyô; height 1.6 mm.··························830 (118)

Fig. 9. *Menestho* (*Oscilla*) *takasago*, n. sp. from Wangwa (st. 18); height 2.3 mm. 825 (113)

Fig. 10. *Chrysallida* (*Odostomella*) *awatubu*, n. sp. from Wangwa (st. 15); height 2.0 mm. ··························822 (110)

Fig. 11. *Chrysallida* (*Miralda*) *affectuosa* Yokoyama var. from 500 m. W of Tairyô; height 2.0 mm. ··························822 (110)

Fig. 12. *Chrysallida* (*Besla*) *curiosa*, n. sp. from 500 m. W of Tairyô; height 1.0 mm. 823 (111)

Fig. 13. *Odostomia* (*s. s.*) *limpidoides*, n. sp. from 700 m. W of Hakusyaton;

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1) Another type of *Pyramidella* possibly referable to the subgenus *Pharcidella* was recorded by the writer from the Byôritu beds of Wangwa at station No. 18. (Sci. Rep. Tôhoku Imp. Univ., Ser. 2, Vol. 18, No. 2, p. 224, 1935). It is very imperfect, and therefore not redescribed in this paper.

height 4.3 mm. ····································825 (113)

Fig. 14. *Odostomia* (*s. s.*) *limpidoides*, n. sp. var. from Wangwa (st. 14); height 4.5 mm. ····································825 (113)

Fig. 15. *Odostomia* (*s. s.*) *venustaeformis* NOMURA from 950 m. SW of Tairyô; height 4.0 mm. ····································826 (114)

Fig. 16. *Menestho* (*s. s.*) *acteoniformis*, n. sp. from Wanga (st. 14); height 2.5 mm. 824 (112)

Fig. 17. *Odostomia* (*Marginodostomia*) *unicordata*, n. sp. from Wangwa (st. 18); height 2.5 mm. ····································826 (114)

Fig. 18. *Turbonilla* (*s. s.*) *fulgurata*, n. sp. from 500 m. W of Tairyô; height 2.3 mm. ····································829 (117)

Fig. 19. *Chrysallida* (*Odostomella*) *taiwanensis*, n. sp. from Wangwa (st. 14); height 2.2 mm. ····································822 (110)

Fig. 20. *Chrysallida* (*Pyrgulina*) *keinosukeana*, n. sp. from Wangwa (st. 18); height 3.4 mm. ····································823 (111)

Fig. 21. *Turbonilla* (*Dunkeria*) *hazawai* NOMURA from the upper course of Sairyôkô; height 5.2 mm. ····································830 (118)

Fig. 22. *Menestho* (*Oscilla*) *niitakayama*, n. sp. from 500 m. W of Tairyô; height 5.0 mm. ····································824 (112)

Fig. 23. *Stylopyramis* (?) species indet. from Wangwa (st. 18); ×ca. 10 ····································830 (118)

Fig. 24. *Turbonilla* (*Pyrgiscus*) *wangwana*, n. sp. from Wangwa (st. 14); diameter 1.0 mm. ····································829 (117)

Fig. 25. *Turbonilla* (*s. s.*) *s-andoi*, n. sp. from 500 m. W of Tairyô; height 2.5 mm. 827 (115)

Fig. 26. *Turbonilla* (*s. s.*) *tairyoensis*, n. sp. from 500 m. W of Tairyô; height 2.9 mm. ····································827 (115)

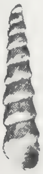
Fig. 27. *Turbonilla* (*Pyrgiscus*) *nodosocostata*, n. sp. from 500 m. W of Tairyô; height 3.0 mm. ····································829 (117)

Fig. 28. *Turbonilla* (*s. s.*) *bosihoensis* NOMURA from Bôsiho (st. 7); height 5.0 mm. 828 (116)

臺灣苗栗層産の塔形貝科に就て（摘要）

野村七平

東北帝國大學理學部地質學古生物學教室所藏の臺灣苗栗層産塔形貝科に屬する29種の記載である。その內21種が新種，5種が筆者が嘗て苗栗層から記載せる種，1種が横山博士によつて內地より記述せられたもの，1種がアダムスの最初創定にかゝるもので，他の1種は，甚だ面白い屬であるらしいが標本不完全の爲め種名を與へることを差しひかへておく。斯くして苗栗層の塔形貝科の種數は一躍既知種の凡そ5倍弱に達したわけであるが，採集次第では，まだまだあることと思ふ。遺憾なのは臺灣現生の本科屬種名がほとんど知られてゐないので，興味は半減すると同時に地質學的の意義も不分明である。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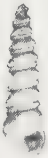
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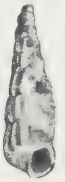
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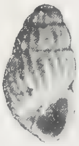
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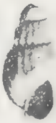
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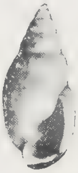
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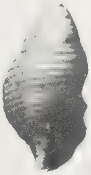
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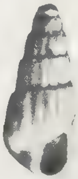
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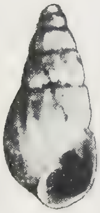
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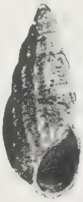
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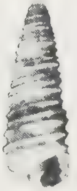
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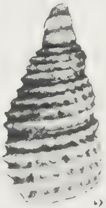
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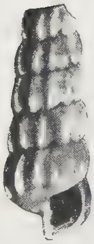
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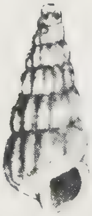
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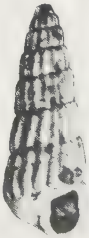
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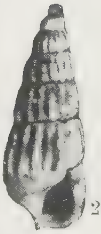
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Photographed by T. Kamizi: retouched by Y. Otuka and S. Inomata

76. *Restudy on the Lorenz's Types of the Cambrian Trilobites from Shantung*

By

Teiichi Kobayashi

(Contribution from Geol. Inst., Imp. Univ. Tokyo ; Read and received Feb. 12th, 1938.)

Dames, Kayser, Bergeron, Airaghi, Monke, Woodward and Walcott have described the primordial faunas from Manchuria, Shantung and elsewhere in China prior to Lorenz, but the zonation of the Cambrian formation had not been established until his paper came out. The Cambrian section south of Wang-tschuang determined by Buchrucker and Lorenz contains three fossiliferous layers, upper, middle and lower ones of which correspond respectively to the Chaumitian (*Chuangia* bed), Kushan, and Changhia (*Amphoton* bed) fossil beds of to-day, and his "sanding Glimmerkalk" with a thin basal conglomerate beneath the *Amphoton* bed is the Manto formation. Thus the fundamental divison of the Cambrian system of Shantung now in use has first been instituted by the joint authors in 1906.

In his monumental work on the Cambrian Faunas of China Walcott has revised most palaeontological studies by previous students. Lorenz's identification of fossil was naturally deserved his revision. During my stay at Washington where I studied Walcott's collection, several questions arose in my mind as to his determination of Lorenz's material. Therefore I visited Freiburg i. Br. where Lorenz's types were kept, and straightened out these questions by actual examination on the types. Determinations of Lorenz's Cambrian trilobites by Lorenz, Walcott and myself are listed in left, middle and right columns as below:—

1) Collection from Lai-wu（萊蕪）

Olenoides (*Dorypyge*) *richthofeni*	*Dorypyge richthofeni*	*Dorypyge laiwuensis* Kobayashi
Agnostus fallax var. *latelimbatus*	*Agnostus chinensis*	*Peronopsis latelimbatus* (Lorenz)
Agnostus parvifrons var. *laiwuensis*	*Agnostus* cfr. *parvifrons*	*Hypagnostus laiwuensis* (Lorenz)
Anomocare commune	*Anomocare chinensis*	*Anomocarella chinensis* (Walcott)
Anomocare ovatum	*Anomocare temenus*	*Anomocarella temenus* (Walcott)
Alokistocare sp.		
Amphoton steinmanni	*Dolichometopus deois*	*Amphoton deois* (Walcott)
Ptychoparia (*Solenopleura*) sp.		
Hyolithes sp.		
Raphistoma bröggeri	*Platyceras willisi*	
Acrothele bohemica	*Acrothele matthewi eryx*	

2) Lower fossil layer of Wang-tschuang（王莊）

Anomocare speciosum	*Anomocarella speciosa*	*Anomocarella speciosa* (Lorenz)
Bathyuriscus asiaticus	*Dolichometopus deois*	*Amphoton deois* (Walcott)
Agnostus fallax	*Agnostus chinensis*	*Peronopsis rakuroensis* (Kobayashi)
Agnostus parvifrons latelimbatus	*Agnostus latelimbatus*	*Hypagnostus latelimbatus* (Lorenz)
Acrothele granulata	*Acrothele matthewi eryx*	

3) Middle fossil layer of Wang-tschuang

Teinistion (?) sp.	*Damesella* cfr. *blackwelderi*	*Damesella paronai* (Airaghi)
Drepanura (?) sp.	*Damesella* cfr. *blackwelderi*	*Damesella paronai* (Airaghi)

4) Upper fossil layer of Wang-tschuang

Schantungia buckruckeri	*Chuangia nitida*	*Chuangia buckruckeri* (Lorenz)
Liostracus latus	*Liostrucus latus*	*Chuangia* cfr. *batia* (Walcott)

5) Tai-shan（泰山）, south of Tsi-nan-fu（濟南府）

Lioparia blautoeides	*Anomocarella baucis*	*Pseudoliostracina blautoeides* (Lorenz)
Orthis cfr. *linnarssoni*		

6) Tsing-tschou-fu（青州府）

Lioparia latelimbata	*Anomocare latelimbatum*	*Lioparia lorenzi* (Kobayashi)
Schantungia monkei	*Pagodia monkei*	*Chuangia monkei* (Lorenz)
Olenus sp.		*Maladioides* or *Changshania* sp.
Brachiopod indet.		
Obolella gracillis	cfr. *Obolus obscurus*	
Orthis sp.		
Acrothele sp.		

Because the Lai-wu fauna was obtained from a boulder in a brook 9 km. west of Lai-wu, it is quite certain that it reveals an assemblage of a single fossil horizon. Lorenz correlated this zone as well as the lower fossil layer of Wang-tschuang to the boundary between the *Paradoxides davidis* and *P. forchhammeri* zones. He followed Monke in regarding the middle fossil layer containing Kushan fauna as Upper Cambrian, and accordingly he took the upper one of Wang-tschuang for a still higher horizon of Upper Cambrian. Furthermore, the faunas of Tai-shan and Tsching-tschou-fu were referred also to Upper Cambrian.

Although it is still far from the decision of accurate correlation between the Cambrian formations of the Atlantic and Pacific provinces, it is certain that the upper layer of Wang-tschuang and the fossil zone of Tsingtschou-fu belong to the *Chuangia* zone of the lower Chaumitian series, the middle layer of Wang-tschuang to the Kushan series which marks off the top of the Middle Cambrian of Eastern and Southern Asia and the lower layer of Wangtschuang and the fossil zone of Laiwu to the lower part of the Changhia series. However, whether the fossil zone of Tai-shan is early Upper or Middle Cambrian is uncertain, because *Pseudoliostracina* is a new genus.

All the trilobite genera are Asiatic ones except for *Peronopsis* and *Hypagnostus* which are common in northern Europe and eastern North America. *P. fallax* to which *P. rakuroensis* and *P. laiwuensis* are closely related, appear in the *oelandicus* zone and disappears in the *forchhammeri* zone. *Hypagnostus* ranges in the Atlantic province from the *tessini* to the *forchhammeri* zone; *H. vortex* occurs in the *Dinesus* zone of Northeastern Australia which was correlated by Whitehouse to the *exsulans* zone of the Baltic Province. Saito discovered an agnostid most probably identifical with *H. latelimbatus* in the Rinson shale of North Chosen. Therefore the lower fossil layer of Laiwu may be an approximate equivalence of the Rison in Shantung. Lorenz's suggestion as to the correlation of this fossil bed to the *davidis-forchhammeri* beds is not infalliable, because the agnositids on which he has laid special weight are wide ranged in the Paradoxidian.

Family Peronopsidae Westergård

Genus *Peronopsis* Corda, 1864

Peronopsis rakuroensis (Kobayashi)

1906. *Agnostus fallax* Lorenz (non Linnarsson) Zeitsch. deutsch. geol. Gesell. Vol. 58, p. 96, pl. 5, figs. 8-9.

1913. *Agnostus chinensis* (partim), Walcott (non Dames) in Willis and Blackwelder's Research in China Vol. 3, p. 7; p. 99, pl. 7, figs. 4, 4a-b. (non figs. 5-5c')

1934. *Agnostus chinensis* Saito, Japan. Jour. Geol. Geogr. Vol. 11, p. 217, pl. 25, figs. 9-1.

1934. cf. *Agnostus rakuroensis* Kobayashi, Am. Jour. Sci. Vol. 27, p. 297.

1935. *Agnostus rakuroensis* Kobayashi, Jour. Fac. Sci. Imp. Univ. Sect. 2, Vol. 4, pt. 2, p. 103, pl. 14, figs. 17-18, pl. 21, figs. 1-2, text-fig. 9.

1936. *Diplorrhina rakuroensis* Whitehouse, Mem. Queensland Mus. Vol. 11, pt. 1, p. 90.

1936. *Peronopsis rakuroensis* Saito, Jour. Fac. Sci. Imp. Univ. Tokyo, Sect. 2, Vol. 4, pt, 3, p. 363.

1937. *Peronopsis rakuroensis* Kobayashi, Jour. Geol. Soc. Japan. Vol. 44, p. 434.

As pointed out on some occasion,1) *Diplorrhinas* should be synonymized with *Peronopsis*. Lorfnz's specimens coincides with *rakuroensis* very nicely which is certainly most similar to *fallax* than to *ferox* or any species of *Peronopsis*. There is, however, some difference between *rakuroensis* and *fallax* in the outline of pygidial axis which in the former is parallel-sided in the anterior half and triangular in the posterior. The change of direction of axial furrow is rather abrupt. The sharp posterior point of axial furrow is in contact with the marginal furrow. According to Westergård,2) *fallax* is a variable species, and different forms have been described by Linnarsson,3) Brögger,4) Tullberg,5) Matthew,6) Lake,7) Illing,8) Strand9) and Westergård,10) but none reveals such a feature.

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1) Kobayashi (1937), Jour. Fac. Sci. Imp. Univ. Tokyo, sect. 2, Vol. 4, pt. 4, p. 455.

2) A. H. Westergård (1936), *Paradoxides oelandicus* Beds of Oeland etc., (Sverig. Geol. Undersök. Ser. c, No. 394,) p. 28, Vl. 1, figs. 9-15.

3) J. G. O. Linnarsson (1869), Om Vestergötlands Cambriska och Siluriska Aflagringar, (Kongl. Svenoska Vet.-Akad, Handl. Bd. 8, No. 2,) p. 81, pl. 2, figs. 54-55.

J. G. O. Linnarsson (1877), Om. Faunan i Lagren med *Paradoxides oelandicus*, (Sverig. Geol. Undersök, Ser. c, No. 22), p. 20, pl. 2, fig. 7.

4) W. C. Brögger (1878), Om *Paradoxidesskiferne* ved Krekling, (Nyt Mag. for Naturv. Vol. 24,) p. 48, pl. 6, fig. 1.

5) S. A. Tullberg (1880), Om *Agnostus* Arterna etc., (Sverig. Geol. Undersök. Ser. C, No. 42,) p. 31, pl. 1, fig. 22.

6) G. F. Matthew (1896), Faunas of the *Paradoxides* Beds in Eastern North America, (Trans. N. Y. Acad. Sci. Vol. 15,) p. 214. pl. 15, figs. 8a-b.

7) P. Lake (1906), British Cambrian Trilobites, (Monogr. Pal. Soc. pt. 1,) p. 20, pl. 2, fig. 12.

8) V. C. Illing (1915), The *Paradoxides* Fauna of a Part of the Stockingford Shales, (Quart. Jour. Geol. Soc. London, Vol. 71), p 416, pl. 31, figs. 12-15.

9) T. Strand (1929). The Cambrian of the Mjþsen District in Norway, (Norsk Geol. Tidsk. Bd. 10,) p. 346, pl. 1, fig. 19.

10) Westergård (1436), Op. cit.

Peronopsis laiwuensis (LORENZ)

Figure 10

1906. *Agnostus fallax* LINNARSSON var. *laiwuensis* LORENZ, Zeitsch. deutsch. geol. Gesell. Vol. 58, p. 96. pl. 4, figs. 7–8
1913. *Agnostus chinensis* WALCOTT in WILLIS and BLACKWELDER's Research in China Vol. 3, p. 6.
1913. *Agnostus chinensis* WALCOTT (partim), Op. cit, p. 99, pl. 7, figs. 5–5c, (non figs. 4–4b).

With the cephalon only this species is hardly distinguishable from the preceding, but they are different in the pygidium.

In *laiwuensis* the axis of pygidium is a little broader and very convex. In the axial outline both species are somewhat similar, but in *laiwuensis* slightly contracted at the midlength and more or less rounded at hind. Furthermore, the marginal brim is thickened on the posterior margin. If the extensive collection is made and examined, the two species may be connected by intermediate forms, but for the time being it may be proper to distinguish them specifically. By the cross light under magnifying lens two ring furrows join at the median tubercle which is located at a point about one-third across the axis of pygidium from the front. This feature can be seen neither in *rakuroensis* nor in *fallax* and its allies.

Subfamily Spinagnostinae HOWÈLL

Genus *Hypagnostus* JAEKEL, 1909

Hypagnostus latelimbatus (LORENZ)

Figures 11, (?) 12.

1906. *Agnostus parvifrons* LINNARSSON var. *latelimbatus* LORENZ, Zeitsch. deutsch geol. Gessell. Vol. 58, p. 98, pl. 4, figs. 92–b; pl. 5, figs. 10–11.
1913. *Agnostus latelimbatus* WALCOTT, in WILLIS and BLACKWELDER's Research in China Vol. 3, p. 7
1913. *Agnostus parvifrons* var. *latelimbatus* WALCOTT, op. cit. p. 102, pl. 7. figs. 1, la.
1936. *Hypagnostus latelimbatus* WHITEHOUSE, Mem. Queensland Mus. Vol. 11, pt. 1, p. 104.
1937. *Hypagnostus parvifrons latelimbatus* KOBAYASHI, Jour. Fac. Sci. Imp. Univ. Tokyo, Sect. 2, Vol 4, p. 4, p. 457.

The pygidium in figs. 9a–b on pl. 4 was procured from Lai-wu and the cephalon and pygidium in figs. 10–11 on pl. 5 from Wang-tschuang. All of them are found associated with *Amphoton deois.*

As LORENZ pointed out, the pygidium from Lai-wu is similar to BRÖGGER's *mammillata*[1] not only in the shape of axis, but also in the marginal brim which is, so far as preserved, very wide at the hind, but tends to narrow laterally. It, however, differs from *mammillata* in the position of the median tubercle which is much more anterior in the former than in the latter. The axis is faintly trilobed; the second segment carries the tubercle; and the length of the anterior two segments is shorter than that of the posterior one. The axis is pointed behind and therefrom a median furrow unites the axis with the posterior brim.

The pygidium from Wang-tschuang was on the other hand compared with MATTHEW's *umbo*[2] by LORENZ, but its outline is longer and its posterior flange wider. The cephalon from the same locality is quite different from others of *Hypagnostus*. Its outline is somewhat quadrate; glabella and cheek are gently and almost equally convex; glabella is half as long as the cephalon, subconical and truncated in front; median tubercle elongated and located at a point one-third across the glabella from the front; circum-glabellar furrow shallow, but deepened into pits at the anteriro-lateral angles; occipital lobe narrows toward the center, but not completely divided into basal side-lobes. A peculiar swell of circular outline as shown in WALCOTT's fig. 1 is obscurely seen in front of glabella which is, however, not quite certain whether it is an original feature or due to the secondary deformation; marginal brim narrow and depressed.

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[1] W. C. BRÖGGER (1878) Om *Paradoxides*skiferne ved Krekling, (Nyt. Mag. for Naturvid.) p. 56, pl. 5, fig. 3.

[2] G. F. MATTHEW (1896), Faunas of the *Paradoxides* Beds in Eastern North America, (Trans. N. Y. Acad. Sci. Vol. 15,) p. 222, pl. 16, figs, 4a–4b.

This glabellar outline is suggestive of BRÖGGER's *truncatus*,[1] but the long median tubercle is present, and the cheek is not so convex as STRAND's *truncatus*.[2] The circular preglabellar swelling is quite different from MATTHEW's *tessella*[3] in size which attains to the frontal brim in this species.

So far as I can make out from the literatures, *parvifrons* appears to be a waste-basket containing various forms, if the species is not considerably variable. Among different forms of *Hypagnostus* I could not, however, find any one with which this cephalon is iden, tifiable. Therefore it is certain that *latelimbatus* is a distinct species. However, which pygidium of the two is combined with the cephalon in one species is indeterminable,

Family Corynexochidae ANGELIN
Subfamily Dolichometopinae WALCOTT
Genus *Amphoton* LORENZ, 1906
Amphoton deois (WALCOTT).

1905. *Dolichometopus deois* WALCOTT, Proc. U. S. Nat Mus. Vol. 29, p. 94.
1906. *Bathyuriscus asiaticus* LORENZ, Zeitsch. deutsch. geol. Gesell. Vol. 58, p. 87, pl. 5, figs. 1–5.
1906. *Amphoton steinmanni* LORENZ, Op. cit. p. 89, pl. 4, figs. 15–17.
1913. *Dolichometopus deois* WALCOTT, in WILLIS and BLACKWELDER's Research in China Vol. 3, p. 7, p. 216, pl. 21, figs. 13, 13a–d, pl. 22, figs. 1, 1a–h, 2, 2a–b.
1916. *Dolichometopus deois* WALCOTT, Smiths. Misc. Coll. Vol. 64, No. 5, p. 365, pl. 54, figs. 1, 1a–m.
1924. *Dolichometopus deois* SUN, Palaeontol. Sinica ser. B, Vol. 1, fasc. 4, p. 81, pl. 5, fig. 9.
1935. *Amphoton deois* KOBAYASHI, Jour. Fac. Sci. Imp. Univ. Tokyo, Sect. 2, Vol. 4, pt. 1, p. 138, pl. 22, fig. 12.

Specific identity of *deois* with *asiaticus* and *steinmanni* is convinced by the comparison between LORENZ's and WALCOTT's type specimens. For the generic reference the reader is referred to my paper (1935).

Family Damesellidae KOBAYASHI
Subfamily Damesellinae KOBAYASHI
Genus *Damesella* WALCOTT, 1905
Damesella paronai (AIRAGHI)

1902. *Cheirurus paronai* AIRAGHI, Atti della Soc. Ital. di Sci. Nat. Vol. 41, p. 11, pl. 1, figs. 29–30.
1905. *Damesella blackwelderi* WALCOTT, Proc. U. S. Nat. Mus. Vol. 29, p. 35.
1906. *Teinistion*(?) sp. LORENZ, Zeitsch. deutsch. geol. Gesell. Bd. 58, p. 100, pl. 5, fig. 14.
1906. *Drepanura*(?) sp. LORENZ. Op. cit. p. 100, pl. 5, fig. 13.

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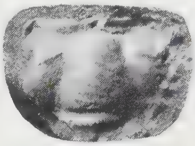
1) BRÖGGER (1878), Op. cit. p. 56, pl. 6, fig. 8.

2) T. STRAND (1929), The Cambrian Beds of the Mjφsen District in Norway, (Norsk geologisk tidsskrift Bd. 10,) p. 348, pl. 1. fig. 10.

3) MATTHEW (1896), Op. cit. p. 221, pl. 16, figs. 3a–c.

1913. *Damesella* cfr. *blackwelderi* WALCOTT, in WILLIS and BLACKWELDER's Research in China, Vol. 3, p. 7.

1913. *Damesella blackwelderi* WALCOTT, Op. cit. p. 125, pl. 10, figs. 10, 10a–j.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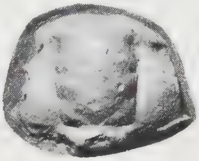
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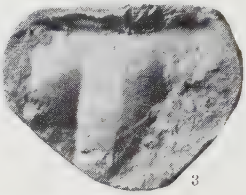
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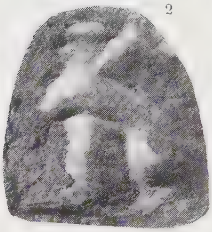
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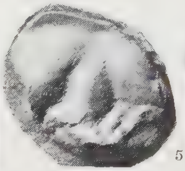
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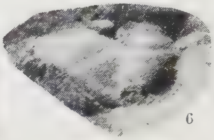
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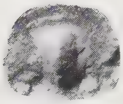
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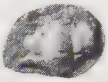
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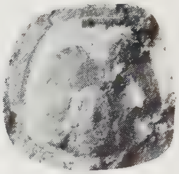
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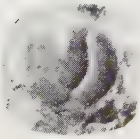
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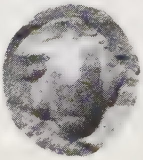
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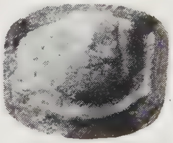
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Fig. 1. *Dorypyge laiwuensis*, new species [= *Olenoides* (*D.*) *richthofeni* LORENZ 1906 in fig. 1, pl. 4] ×1.

Fig. 2. *Chuangia bruchruckeri* (LORENZ) [= *Schantungia bruchruckeri* LORENZ in fig. 16, pl. 5.] ×2.

Fig. 3. *Chuangia* cfr. *batia* (WALCOTT) [= *Liostracus latus* LORENZ in fig. 15, pl. 5.] ×1.

Fig. 4. *Lioparia lorenzi*, new species [= *Lioparia latelimbata* LORENZ fig. 19, pl. 5.] ×2.

Fig. 5. *Pseudoliostracina blautoeides* (LORENZ) [= *Lioparia blautoeides* LORENZ in fig. 3, pl. 6.] ×1½.

Fig. 6. *Maladioides* or *Changhania* sp. [= *Olenus* sp. LORENZ in fig. 20, pl. 5.] ×2.

Fig. 7. *Chuangia monkei* (LORENZ) [= *Schantungia monkei* LORENZ in fig. 17, pl. 5.] ×2.

Fig. 8. *Anomocarella chinensis* (WALCOTT) [= *Anomocare commune* LORENZ in fig. 10, pl. 4.] ×1½.

Fig. 9. *Anomocarella speciosa* (LORENZ) [= *Anomocare speciosum* LORENZ in fig. 6, pl. 5.] ×2.

Fig. 10. *Peronopsis laiwuensis* (LORENZ) [= *Agnostus fallax laiwuensis* LORENZ in fig. 8a pl. 10.] ×6.

Fig. 11. *Hypagnostus latelimlatus* (LORENZ) [= *Agnostus parvifrons* var. *latelimbatus* LORENZ in figs. 10, pl. 5.] ×6.

Fig. 12(?) *Hypagnostus latelimbatus* (LORENZ) [= *Agnostus parvifrons* var. *latelimbatus* LORENZ in fig. 9, pl. 4.] ×6.

Walcott's suggestion as to the identification of Lorenz's specimens with *blakwelderi* is justifiable, but his specific name is preoccupied by Airaghi's, as pointed out in my paper (1935).

Family Oryctocephalidae Raymond
Subfamily Dorypygerinae Kobayashi
Genus *Dorypyge* Dames, 1883
Dorypyge laiwuensis, new species

Figure 1.

1906. *Olenoedes (Dorypyge) richthofeni* Lorenz, Zeitsch. deutsch. geol. Gesell. vol. 58, p. 51. pl. 4, figs, 1–5.

As pointed out by Lorenz, there are several differences between his and Dames' *richthofeni*. In his form the glabella expands gradually forward without any distinct contraction at a point of frontal pits on an axial furrow and the pits are not so significant as in Dames, form. In the outline of the glabella this species resembles *D. manchuriensis*[1], but its fixed cheek is much narrower.

The glabellar outline, distinct lateral furrows and grade of granulation on the surface are the good distinguishing characteristics of this new species.

Family Leiostegidae Bradley
Subfamily Leiosteginae Kobayashi
Genus *Chuangia* Walcott, 1911
Chuangia monkei (Lorenz)

Figure 7.

1906. *Schatungia monkei* Lorenz, Zeitsch. deutsch. geol. Gesell. vol. 58, p. 95, pl. 5, figs. 17–18, text-fig.
1906, *Schantugia crassa* (nom. nud.) Lorenz, Zeitsch. deutsch. geol. Gesell, vol. 58, p. 109.
1913. *Pagodia monkei* Walcott, in Willis and Blackwelder's Research in China vol. 3, p. 7.
1935. *Chuangia transversalis* Sun (non Kobayashi) Palaeontol. Sinica Ser. B, vol. 7, Fasc. 2, p. 20 pl. 1, fig. 10.

This cranidium having a large eye-band, narrow fixed cheek and small postero-lateral limb indicates its reference to the *transversalis* group of *Chuangia*, instead of *Pagodia*, with certainty. The associated pygidium is also typical of *Chuangia*. In *transversalis*[2] the occipital ring has uniform length, while it narrows distinctly from the middle to both ends. In this and some other respects this species perfectly agrees with Sun's *transversalis*.

Chuangia buchruckeri (Lorenz)

Figure 2.

1906. *Schantungia buchruckeri* Lorenz, Zeitsch. deutsch. geol. Gesell. Bd. 58, p. 93, pl. 5, fig, 16 text-fig.
1911. *Chuangia nitida* Walcott, Smiths. Misc. Coll. vol. 57, No. 4, pp. 85–86, pl. 15, fig. 6.
1913. *Chuangia nitida* Walcott, in Willis and Blackwelder's Research in China vol. 7, pp. 7, 172, pl. 17, fig. 21.

Walcott's identification of *buchruckeri* with *nitida* is quite correct, and accordingly Lorenz's specific name is valid.

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1) Kobayashi (1935), Jour. Fac. Sci. Imp. Univ. Tokyo, Sect. 2, vol. 4, pt. 2, p. 160, pl. 22, figs. 9–10.

2) Kobayashi (1933), Japan. Jour. Geol. Geogr. vol. 11, p. 108, pl. 10, figs. 7, 14–15.

Chuangia cfr. *batia* (WALCOTT)

Figure .3.

1905. *Ptychoparia* (?) *batia* WALCOTT, Proc. U. S. Nat. Mus. vol. 29, p. 75.
1906. *Liostracus latus* LORENZ, Zeitsch. deutsch. geol. Gesell. Bd. 58, p. 95, pl. 5. fig. 15.
1911. *Chuangia batia* WALCOTT, Smiths. Misc. Coll. vol. 57, No. 4, p. 81, pl. 15, figs. 3–3a.
1913. *Liostracus latus* WALCOTT, in WILLIS and BLACKWELDER's Research in China vol. 3, p. 7.
1913. *Chuangia batia* WALCOTT, Op. cit. p. 170, pl. 17, figs. 20, 20a-b.
1926. *Chuangia batia* SUN, Palaeontol. Sinica Ser. B. vol. 1. fasc. 4, p. 58 pl. 4, figs. 4a–e.

The type specimen does not show such a wide frontal limb of cranidium as illustrated by LORENZ. So far as I can see, it is certainly an incomplete cranidium of *Chuangia batia* group and probably that of *batia* itself.

Family Andrarinidae RAYMOND (=Liostracidae ANGELIN)
Subfamily Anomocarinae PONLSEN
Genus *Lioparia* LORENZ, 1906
Lioparia lorenzi, new species.

Figure 4.

1906. *Lioparia latelimbata* LORENZ, Zeitsch, deutsch geol. Gesell. Bd. 58, pp. 99, pl. 5, fig. 19.
1913. *Anomocare latelimbatum* WALCOTT, in WILLIS and BLACKWELDER's Research in China vol. 3, p. 7.

This species is certainly congeneric with DAMES' *latelimbatum*[1], but a close examination soon reveals a remarkable difference between the two with regard to the relative length of the preglabellar field to the glabella exclusive of the occipital ring. Namely, dimension of the two parts of cranidium are almost identical in this species while the glabella is much longer than the preglabellar field in DAMES' *latelimbatum* and my *vulagaris*[2]. This type specimen exhibits three pairs of glabellar furrows which are transversal, instead of oblique in *vulgaris*.

Family Asaphiscidae RAYMOND
Genus *Anomocarella* WALCOTT, 1905
Anomocarella chinensis WALCOTT

Figure 8.

1905. *Anomocarella chinensis* WALCOTT, Proc. U. S. Nat. Mus. vol. 29, p. 57.
1906. *Anomocare commune* LORENZ, Zeitsch. deutsch. geol. Gessell. vol. 58, p. 91, pl. 4, figs. 10–11, 13, non. 14.
1913. *Anomocarella chinensis* WALCOTT, in WILLIS and BACKWELDER's Research in China vol. 3, p 7, & p. 200, pl. 20, figs. 3, 3a–e, 4, 4a.

LORENZ's cranidium coincides with that of *chinensis*, and his pygidium in fig. 14 probably belongs to the species, but the pygidium in fig. 13 may be that of *ovatum*. i. e. *temenus*.

Anomocarella temenus (WALCOTT)

1905. *Anomocare temenus* WALCOTT, Proc. U. S. Nat. Mus. vol. 29, p. 53.
1906. *Anomocare ovatum* LORENZ, Zeitsch, deutsch. geol. Gesell. vol. 58, p. 91, pl. 4, fig. 12.
1906. *Anomocare commune* LORENZ, Op. cit. p. 91, pl. 4, fig. 14.

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1) DAMES (1883), in RICHTHOFEN's China vol. 4, p. 14, pl. 2, figs. 9-10, non. 13, 16 & 16a.
KOBAYASHI (1937), Jour. Geol. Soc. Japan vol. 44, p. 428, pl. 17, fig. 5, Trans. Proc. Pal. Soc. Japan No. 7, p. 77, pl. 17, fig. 5.

2) KOBAYASHI (1935) Jour. Fac. Sc. Imp. Univ. Tokyo, Sect. 2, vol. 4, pt. 2, p. 247, pl. 9, figs. 1-7.

1913. *Anomocarella temenus* WALCOTT, in WILLIS and BLACKWELDER's Research in China vol. 3 p. 7. & p. 206, pl. 20, figs. 7, 7a-d.

WALCOTT's identification of this species with his *temenus* is the best, so far as it can be. done with such a fragmentary cranidium.

Anomocarella speciosa (LORENZ)

Figure 9.

19.5. *Anomocare megalurus* WALCOTT (non DAMES), Proc. U. S. Nat. Mus. vol. 29, p. 192, pl. 18, figs. 9, 9a-f.

1906. *Anomocare speciosum* LORENZ, Zeitsch. deutsch. geol. Gesell. vol. 58, p. 91, pl. 5, figs. 6-7.

1913. *Anomocarella speciosa* WALCOTT, in WILLIS and BLACKWELDER's Research in China, vol. 3, p. 7.

1913. *Anomocare megalurus* WALCOTT, Op. cit. p. 192, pl. 18, figs. 9, 9a=f.

In the outline of glabella, rather distinct lateral glabellar furrows, large eye-band, horizontal frontal rim which is longer than the frontal limb, and other features this cranidium perfectly agrees with WALCOTT's *megalurus*. As noticed elsewhere1), WALCOTT's *megalurus* is distinct generically from DAMES', and therefore LORENZ' *speciosum* is a valid name. The divergent anterior facial sutures, distinct eye-ridge and eye at the mid-length of cranidium suggest that this belongs to *Anomocarella* rather than to *Manchuriella*.

Family Uncertain

Genus *Pseudoliostracina*, new genus

Trilobite with the conical narrow glabella, preglabellar horizontal frontal border, relatively wide fixed cheek and medium sized eyes.

Genotype :—*Lioparia blautoeides* LORENZ.

Pseudoliostracina blautoeides (LORENZ)

Figure 5

1906. *Lioparia blautoeides* LORENZ, Zeitsch. deutsch. geol. Gesell. vol. 58, p. 92, pl. 6, figs. 1 & 3. non. 2.

1913. *Anomocarella baucis* WALCOTT, in WILLIS and BLACKWELDER's Research in China vol. 3, p. 7

Although the cranidium is so incomplete, it is well characterized by its narrow conical glabella, deep axial furrows joining with each other at the pointed glabellar front and then running across the frontal limb, medium sized eye, fixed cheek which is wider than the glabella and crossed by the eye-ridge, and tolerably developed frontal border. Because none of the trilobite genera has such a combination of characters, a new genus *Pseudoliostracina* is established for it.

As suggested by this name, *Liostracina*2) and *Liostracinoides*3) may be the most resembling genera, but both of them can easily be distinguished from this genus by their narrow convex wire-like frontal brim. Furthermore, *Liostracina* has a wider fixed cheek, smaller eyes, more cylindrical glabella and obsolete eye-ridge.

The cranidium and associate pygidium (LORENZ fig. 1) are somewhat similar to those of *Anomocarella baucis*4), but the cheek is narrower, frontal limb shorter and frontal brim elevated in *baucis*. In the pygidium the number of the segments is more numerous, and the hind of the axis is more rounded in the former.

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1) KOBAYASHI (1937), Op. cit. p. 433.

2) MONKE (1913), Jahrb. königl. preuss. geol. Landesanst. u. Bergakad. vol. 23, pt 1, p. 114.

3) RAYMOND (1937), Bull. Geol. Soc. Am. vol. 48, p. 1092.

4) WALCOTT in WILLIS and BLACKWELDER's Research in China vol. 3, p. 196, pl. 20, figs. 2, 2a.

Another pygidium (Lorenz, fig. 2) appears more likely that of *Anomocarella tatian* than anything[1] else.

Maladioides or *Changshania* sp.

Figure 6.

1906. *Olenus* sp. Lorenz, Zeitsch. deutsch. geol. Gesell. Bd. 58, p. 79, pl. 5. fig. 20.
1936. *Maladioides* sp. Kobayashi Japan, Jour. Geol. Geogr. vol. 13, p. 92.

As discussed already in my previous paper, it is certain that this pygidium belongs to either *Maladioides* or *Changshania*. In the broad triangular outline and narrow axial lobe it agrees better with *Changshania* than with *Maladioides*. However, alated lateral extremities which are characteristic of *Changshania* cannot be seen in Lorenz's type specimen.

In conclusion I wish to express my sincere thanks to Prof. W. Soergel of the Geological Institute, University, Freiburg i. Br. Germany for the opportunity to study the Lorenz's stype specimens.

ロレンツ氏の山東産寒武利亞紀三葉蟲の再研究 （摘要）

小　林　貞　一

原品に就いて筆者の研究結果を881 (121) 頁に表記せり。青州府化石產地及び王莊上部化石層は炒米店層下部に，王莊中部化石層は崮山層に，王莊下部化石層と萊蕪化石產地は張夏層の下部に相當す。泰山の產地の時代は不明なり。

Dorypyge laiwuensis, *Lioparia lorenzi*, *Pseudoliostracina blautceides* は新種にして其中最後のものは新屬 *Pseudoliostracina* の基本種なり。

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[1] Walcott (1913), Op. cit. p. 206, pl. 21, figs. 1, 1a-b.

日本古生物學會記事

Proceedings of the Palaeontological Society of Japan

昭和13年6月11日　日本古生物學會第11回例會を東北帝國大學理學部地質學古生物學教室に於て開催す（參會者28名）講演者並に講演題目次の如し。

歐米に於ける有孔蟲研究の現況	半澤正四郎
三波川系より新發見の放散蟲化石の研究（豫報）	藤本治義
Two New Species of *Echinarachnius* from Karafuto (South Saghalien)	Syôzô NISIYAMA
A New Species of *Calyptogena* from the Higasiyama Oil-Field, Niigata-ken（代讀）	Tuneteru OINOMIKADO and Kinji KANEHARA
Pliocene Marine Mollusca in Japan (Part I)	Yanosuke OTUKA
臺灣苗栗層產の塔形貝科に就て	野村七平
Miocene Mollusca Yamaguti, Kozai-mura, Igugun, Miyagiken, Northeast Honsyu, Japan	Sitihei NOMURA
Carboniferous Conularia from the Kitakami Mountainland in Japan	Tosio SUGIYAMA
A Miocene Brachgnatha Crab from Yuda, Iwate Prefecture, Japan（代讀）	SEIZI INAGAKI
北海道石狩統產甲殼類の1種に就て	長尾巧 大立目謙一郎
Upper Cambrian Fossils from British Columbia（代讀）	Teiichi KOBAYASHI
亞炭層中の微細植物化石	島倉巳三郎
Tertiary Plants from Tyôsen (III)	Seidô ENDÔ
朝鮮洛東層產羊齒類の2, 3に就て	大石三郎

尙講演終了後半澤正四郎氏のPalaeontological Unionに關する報告ありたり

昭和13年10月8日　日本古生物學會第12回例會を北海道帝國大學理學部地質學鑛物學教室に於て開催す（參加者21名）。講演者並に題目次の如し。

An Occurrence of *Acervulina*, Encrusting Form of Foraminifera in Torinosu Limestone near Itukaiti-Mati, Kwantô Mountainland.（代讀）	Shôshirô HANZAWA
On two Interesting Tertiary Hydrozoas from the Philippine Islands.	Hisakatsu YABE and Toshio SUGIYAMA
On Some fossil Species of *Cancellaria* from Japan.（代讀）	Kotora M. HATAI and Syôzô NISIYAMA
Palaeontological Notes on Certain Japanese Scallops.（代讀）	Kotora M. HATAI and Syôzô NISIYAMA
青森縣鮮新統から產した軟體動物3種に就いて（代讀）	大塚彌之助
山東ロレンツの *Raphistoma bröggeri* の再研究と腹足類屬 *Pelagiella* に就いて（代讀）	小林貞一
仙臺龍ノ口層產蟹化石に就て	長尾巧
江戶時代に於ける龍骨論爭の史的研究（代讀）	後閑文之助
花粉分析法に依りて推定さるゝ第三紀末以降の北日本の自然地理的變遷（其の2）釧路統產泥炭の花粉分析結果に就いて	佐々保雄 山崎次男
京都府與謝半島の第三紀植物（豫報）	大石三郎 藤岡一男

Dicksonioptera naumanni NATHORST に就いて	大石三郎
滿洲間島省大拉子產 *Pseudocycas* の 1 種の表皮細胞構造に就いて	大石三郎

昭和 12 年 12 月以降 13 年 12 月 20 日迄の會員移動次の如し。

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	平山健	Maurice TRASSAERT	
退會者	阿部顯	河村良介	柿原明十（死亡）
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	松岡熙		

日本古生物學會規則

1. 本會ハ日本地質學會ノ部會ニシテ日本古生物學會ト稱ス
2. 本會ハ古生物學及ビ之レニ關スル諸學科ノ進歩ヲ助ケ斯學ノ普及ヲ圖ルヲ以テ目的トス
3. 本會ハ第2條ノ目的ヲ達スルタメニ總會及講演會ヲ開ク
4. 本會ノ紀事及ビ會員ノ寄稿ハ地質學雜誌ニ掲載シ，其ノ別刷ヲ日本地質學會々員ニアラザル本會々員ニ配布ス
5. 本會ノ會費ハ年額3圓トシ，日本地質學會々員ハ年額1圓トス，但シ一時ニ金100圓以上ヲ寄附セル者ヲ賛助會員ニ推ス
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日本古生物學會
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Constitution of the Palaeontological Society of Japan.

Article 1. The Society shall be known as the Palaeontological Society of Japan. It forms a section of the Geological Society of Japan.

Article 2. The object of the Society is the promotion of palaeontology and related sciences.

Article 3. This Society to execute the scheme outlined under Article 2, shall hold annual meetings and discussions.

Article 4. Proceedings of the Society and articles for publication shall be published through the Journal of the Geological Society of Japan. Separates and circulations will be sent to members of the Palaeontological Society who are not members of the Geological Society of Japan.

Article 5. The annual dues of this Society is two dollars for the foreign members of the Society.

Article 6. This Society shall hold the following executives. President one person, Councillors several persons.

Article 7. The President and Councillors shall be elected annually. The President and Councillors shall be elected from the Society body by vote of its members. All elections shall be ballot.

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